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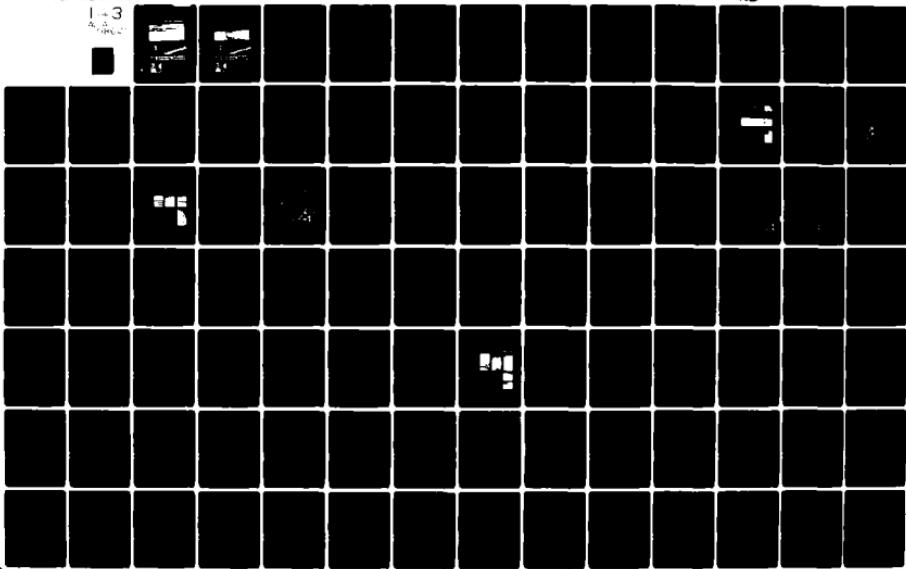
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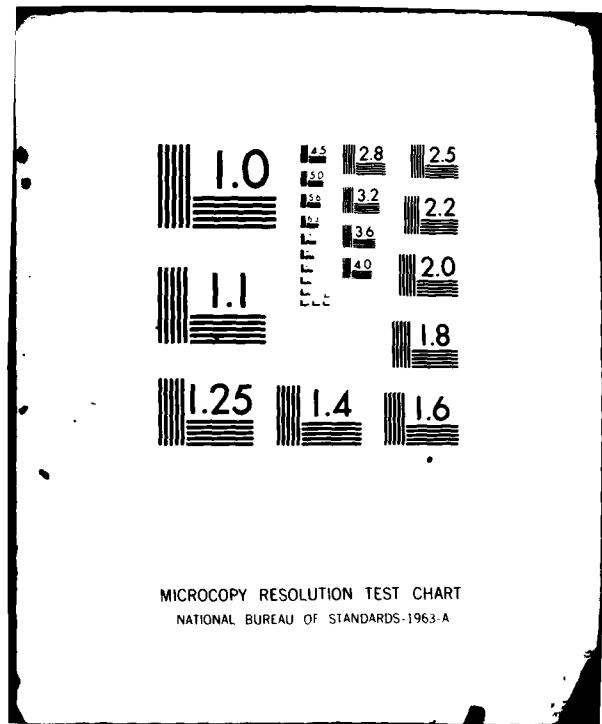
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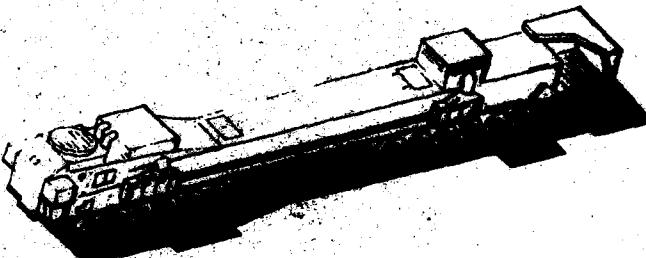
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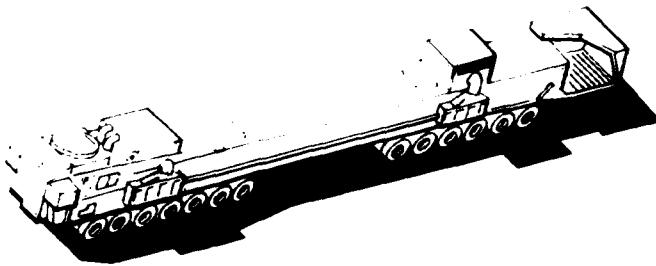
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DEPLOYMENT AREA SELECTION
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CHAPTER 1: PROGRAM OVERVIEW

CHAPTER 1 PRESENTS AN OVERVIEW OF THE M-X SYSTEM AND THIS EIS INCLUDING:

- o A DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES, INCLUDING SCHEDULE AND RESOURCE REQUIREMENTS
- o AN OVERVIEW OF THE TIERED M-X ENVIRONMENTAL PROGRAM THAT INVOLVES SITE SELECTION AND LAND WITHDRAWAL
- o A PRESENTATION OF PUBLIC SAFETY CONSIDERATIONS WITH PHYSICAL SECURITY AND SYSTEM HAZARDS
- o A SUMMARY OF FEDERAL AND STATE AUTHORIZING ACTIONS ASSOCIATED WITH CONSTRUCTION AND OPERATIONS

CHAPTER 2: COMPARATIVE ANALYSIS OF ALTERNATIVES

CHAPTER 2 COMPARES THE ENVIRONMENTAL IMPACTS OF ALTERNATIVE M-X SYSTEM AND OPERATING BASE COMBINATIONS. DETAILS INCLUDE:

- o THE SELECTION OF LOCATIONS FOR TWO SUITABLE DEPLOYMENT REGIONS, 200 CLUSTERS, AND SEVEN ALTERNATIVE OPERATING BASES
- o PRESENTATION OF CONCEPTUAL CONSTRUCTION SCHEDULES, PERSONNEL REQUIREMENTS, AND RESOURCE NEEDS FOR EACH ALTERNATIVE
- o COMPARATIVE ENVIRONMENTAL ANALYSIS BY ALTERNATIVE FOR EACH RESOURCE PRESENTED IN CHAPTERS 3 AND 4

CHAPTER 3: Affected Environment

CHAPTER 3 DESCRIBES THE POTENTIALLY Affected ENVIRONMENT IN NEVADA, UTAH, TEXAS, AND NEW MEXICO. ENVIRONMENTAL FEATURES OF BOTH BI-STATE REGIONS AND OF OPERATING BASE VICINITIES ARE PRESENTED. RESOURCES ADDRESSED INCLUDE:

- o WATER, AIR, MINING, VEGETATION, AND SOILS
- o WILDLIFE, AQUATIC SPECIES, AND PROTECTED PLANT AND ANIMAL SPECIES
- o EMPLOYMENT, POPULATION, PUBLIC FINANCE, TRANSPORTATION, CONSTRUCTION RESOURCES, ENERGY, LAND USE, AND RECREATION
- o CULTURAL RESOURCES, NATIVE AMERICAN CONCERNs, ARCHAEOLOGICAL AND HISTORIC FEATURES

CHAPTER 4: ENVIRONMENTAL CONSEQUENCES TO THE STUDY REGIONS AND OPERATING BASE VICINITIES

CHAPTER 4 EXPANDS THE CHAPTER 2 ANALYSIS FOR EACH RESOURCE IN CHAPTER 3. ADDRESSING THE QUESTIONS RAISED IN SCOPING, CHAPTER 4 DISCUSSES THE FOLLOWING TOPICS ON A RESOURCE BY RESOURCE BASIS.

- o THE REASON EACH RESOURCE IS IMPORTANT AND THE SOURCE OF SIGNIFICANT DIRECT AND INDIRECT IMPACTS
- o THE INTERRELATIONSHIPS BETWEEN RESOURCES AND KEY CAUSES OF SHORT- AND LONG-TERM IMPACTS SUCH AS AREA DISTURBED AND POPULATION GROWTH
- o MITIGATIVE MEASURES WHICH POTENTIALLY REDUCE IMPACTS
- o A MATRIX OF POTENTIAL IMPACT SEVERITY BY GEOGRAPHIC AREA FOR THE PROPOSED ACTION AND EACH ALTERNATIVE

CHAPTER 5: APPENDICES

CHAPTER 5 CONTAINS AN M-X BASING ANALYSIS REPORT WITH APPLICATION OF SELECTION CRITERIA TO CANDIDATE BASING AREAS. ADDITIONAL SECTIONS INCLUDE:

GLOSSARY
ACRONYMS
LIST OF PREPARERS
DISTRIBUTION LIST

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Operating Base Vicinity Environment

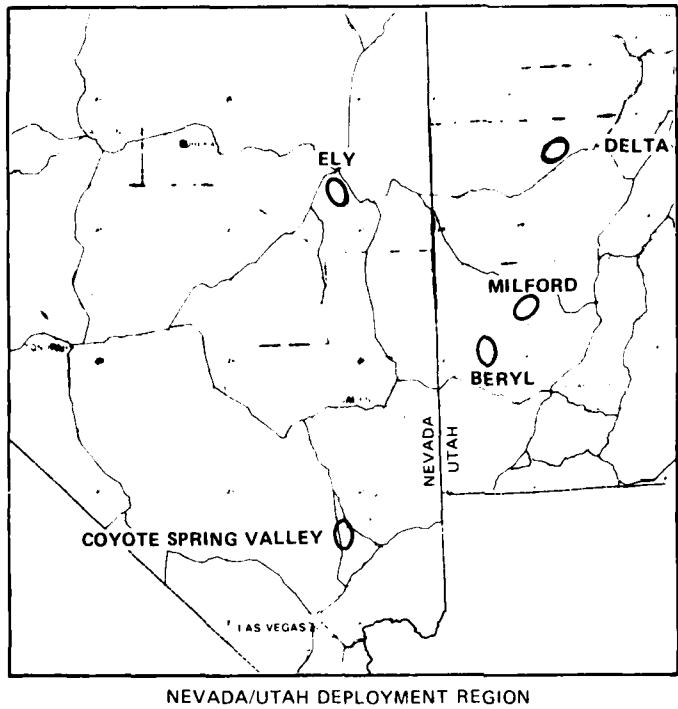


OPERATING BASE VICINITY ENVIRONMENT

The Proposed Action and eight alternatives present deployment systems featuring full deployment of 200 missiles in Nevada/Utah or Texas/New Mexico, and split basing deployment of approximately one-half the missiles in Nevada/Utah and one-half in Texas/New Mexico. The Proposed Action and alternatives each require two operating base (OB) complexes. Base site locations under study are in the vicinity of Ely and Coyote Spring Valley, Nevada; Beryl, Milford, and Delta, Utah; Clovis, New Mexico; and Dalhart, Texas (Figure 3.4-1).

Both OB complexes will contain a provision for an airfield. In addition, they may contain any or all of the following: designated assembly area (DAA), operational base test site (OBTS), railroad spur and connection to the designated transportation network. Each of these major components is described in Chapter 1.

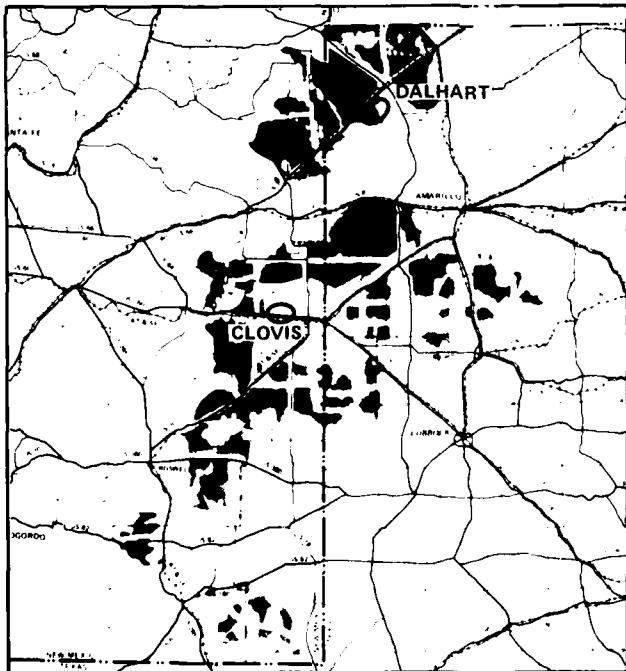
- o The OB, with airfield, contains the support facilities found at most major Air Force bases, plus specialized technical support facilities.
- o The DAA is where missiles, canisters, and launchers are assembled and checked out.
- o The OBTS, located at the first OB/DAA constructed, is a group of three shelters plus test and support facilities, it will be used for system development and evaluation.
- o The railroad spur will connect the OB and the DAA to a commercial railroad and will be used for the delivery of some missile parts and other system materials and for delivery of construction and operations materials.
- o The designated transportation network (DTN) is a special heavy-duty road connecting the DAA with the OBTS and the clusters in the deployment area. Canisterized missiles and launcher parts will be hauled by special transport that can drive only on the DTN.



NEVADA/UTAH DEPLOYMENT REGION

LEGEND

- ALTERNATIVE OPERATING BASE COMPLEX LOCATIONS
- GEOTECHNICALLY SUITABLE AREAS



TEXAS/NEW MEXICO DEPLOYMENT REGION

1917-1-A

Figure 3.4-1. Potential operating base sites.

OB Vicinity Environment

If the full deployment basing mode is selected only one DAA will be required. If the alternative choice is split basing, two DAAs will be provided, one at each OB. If the second DAA is required, a supporting railroad spur and connection to the DTN will also be required. An OB complex that has a DAA will have more personnel than one without a DAA and will require a larger land area.

Table 3.4-1 shows the Proposed Action, all of the alternatives, and the location of the OB complexes. Table 3.4-2 summarizes the OB complex major components for first and second operating bases, and for full deployment and split basing. Table 3.4-3 shows approximate land area requirements for operating base complexes.

Table 3.4-1. Proposed action and alternatives.

PROPOSED ACTION AND ALTERNATIVES	DEPLOYMENT AREAS ¹				OPERATING BASE VICINITIES	
	NEVADA	UTAH	TEXAS	NEW MEXICO	FIRST	SECOND
Proposed Action Nevada/Utah. Full Deployment	— 200 —		0	0	Coyote Spring Valley, NV	Milford, UT
Full Deployment Alternatives						
1. Nevada/Utah	— 200 —		0	0	Coyote Spring Valley, NV	Beryl, UT
2. Nevada/Utah	— 200 —		0	0	Coyote Spring Valley, NV	Delta, UT
3. Nevada/Utah	— 200 —		0	0	Beryl, UT	Ely, NV
4. Nevada/Utah	— 200 —		0	0	Beryl, UT	Coyote Spring Valley, NV
5. Nevada/Utah	— 200 —		0	0	Milford, UT	Ely, NV
6. Nevada/Utah	— 200 —		0	0	Milford, UT	Coyote Spring Valley, NV
7. Texas/New Mexico	0	0	— 200 —		Clovis, NM	Dalhart, TX
Split Basing Alternative						
8. Nevada/Utah-Texas/New Mexico	— 100 —	— 100 —			Coyote Spring Valley, NV	Clovis, NM
No Action Alternative	NA			NA	NA	NA

3623-3

¹The numbers represent missiles deployed (approximate for split basing).

Table 3.4-2. Major components for operating base complexes.

FULL DEPLOYMENT BASING MODE		SPLIT BASING MODE	
FIRST OB COMPLEX	SECOND OB COMPLEX	FIRST OB COMPLEX	SECOND OB COMPLEX
Operating Base ¹	Operating Base ¹	Operating Base ²	Operating Base ²
DAA		DAA	DAA
DTN		DTN	DTN
OBTS		OBTS	

3017-1

¹The OB at the first OB complex is larger than the OB at the second OB complex.

²In the split basing mode, the second OB and airfield are approximately the same size as the first OB and airfield.

Table 3.4-3. System land area requirements for operating base complexes.

STRUCTURE	CONSTRUCTION PHASE (ACRES)	OPERATIONS PHASE (ACRES)		
		FENCED	NON-FENCED	TOTAL
Full Deployment Basing Mode				
First Operating Base W/Airfield ¹	6,140	3,740	2,400	6,140
Second Operating Base W/Airfield	4,240	2,740	1,500	4,240
Designated Assembly Area (DAA)	1,950	1,950	—	1,950
Operational Base Test Site (OBTS) ²	250	30	60*	90
Split Basing Mode				
First Operating Base W/Airfield ¹	6,140	3,740	2,400	6,140
Second Operating Base ³ W/Airfield ¹	6,140	3,740	2,400	6,140
Designated Assembly Area (DAA) ³	1,950	1,950	—	1,950
Operational Base Test Site (OBTS) ²	250	30	60*	90

3018-1

¹Airfield includes clear zones.

²An additional 160 acres of land is required on a temporary basis during construction.

³For split basing mode, second operating base will be same as first operating base and will also have a DAA. It will not have an OBTS.

*This land requirement is primarily roads to connect the several widely separated major components of the OBTS.

Beryl



BERYL (3.4.1)

Introduction (3.4.1.1)

The area of analysis (AOA) for the Beryl operating base includes Iron County. The AOA is located in the south central section of the designated region of influence (ROI) as shown in Figure 3.4.1.1-1. Cedar City is the major settlement in the AOA. This section and Chapter 4 detail important environmental characteristics of Beryl and vicinity and the proposed base site, respectively.

In 1849, Brigham Young sent an expedition to explore and locate suitable sites for settlement. They discovered an iron ore deposit west of what is now Cedar City, hence the name Iron County. In 1851, Cedar City and Parowan were established. To this day they remain the major population center in Iron County.

The principal industries of Iron County are mining and shipping iron ore. The first iron ore refined west of the Mississippi occurred here. However, early smelting efforts failed because of the lack of economical transportation to large markets.

In 1923, when Union Pacific Railroad ran a spur line into Cedar City, agriculture and iron ore, mining and processing moved forward as major industries.

Other Projects

No major projects are currently planned within Iron County over the 1980-1994 period (Figure 3.4.1.1-2 through Figure 3.4.1.1-4).

Natural Environment (3.4.1.2)

Groundwater (3.4.1.2.1)

Groundwater occurs mainly in the valley alluvial fill. Artesian conditions occur in the central part of the valley. Along the valley edges the depth to water may exceed 180 ft.

Nearly all recharge to groundwater comes directly or indirectly from precipitation in the mountains. A small amount of underflow from Cedar City Valley moves through alluvial deposits in mountain range gaps.

Perennial yields of 5,000 to 35,000 acre-ft have been estimated for the groundwater system in the Escalante Desert area. According to the Utah Division of Water Resources, groundwater use in the Beryl-Enterprise area averaged 79,000 acre-ft per year for the 15-year period from 1963 to 1977. Groundwater withdrawals for some years were as high as 93,000 acre-ft; however, withdrawals for 1978 totaled only 70,650 acre-ft. Of that amount, about 69,600 acre-ft were used for irrigation, 750 for domestic and stock use, and 300 for municipal purposes.

Groundwater in the Beryl area is either fresh or slightly saline with the best quality groundwater located in the southern part of the area. The poorest quality water occurs 1 to 3 mi south of Beryl where pumping is the highest.

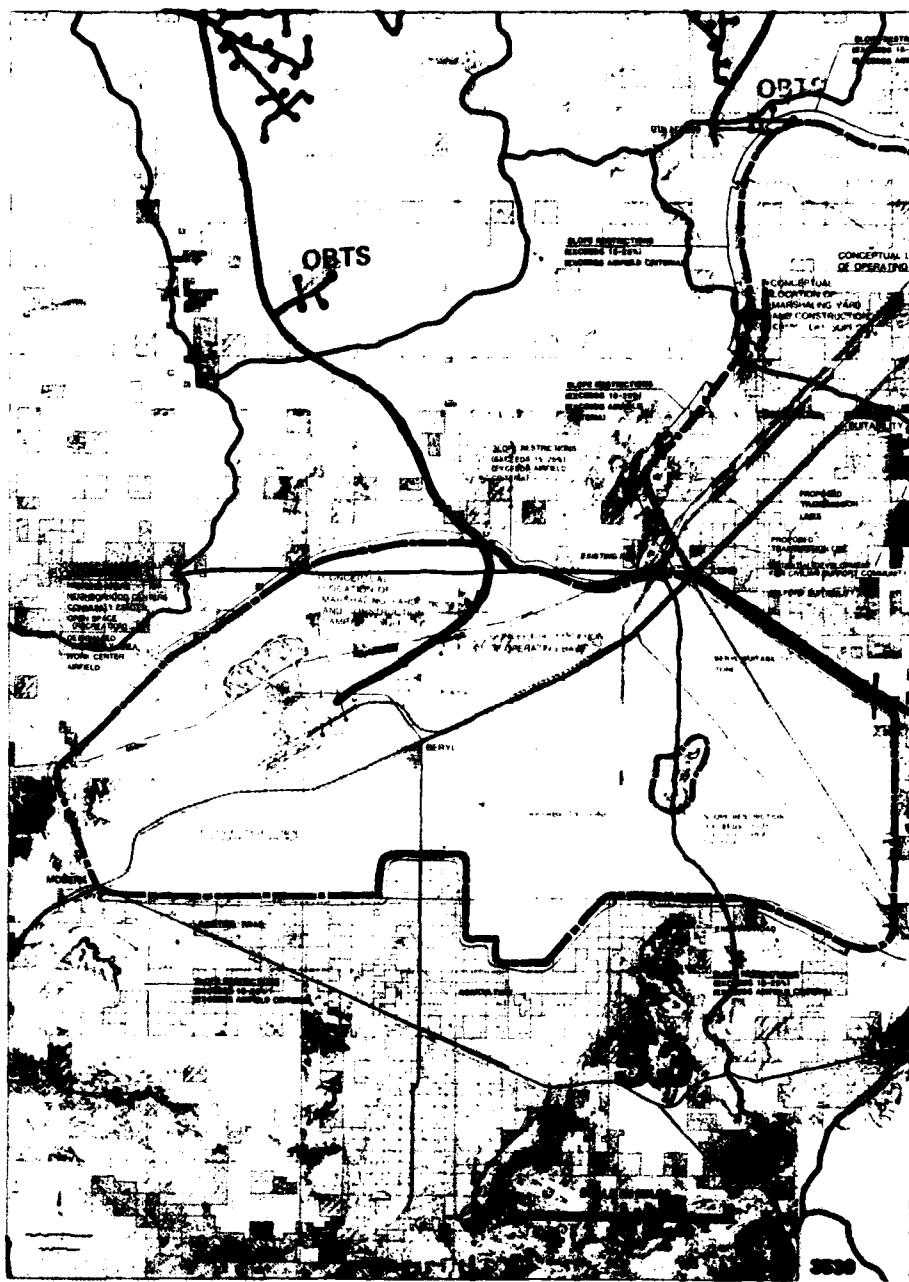


Figure 3.4.1.1-1. Area of Analysis (AOA) for the Beryl vicinity.

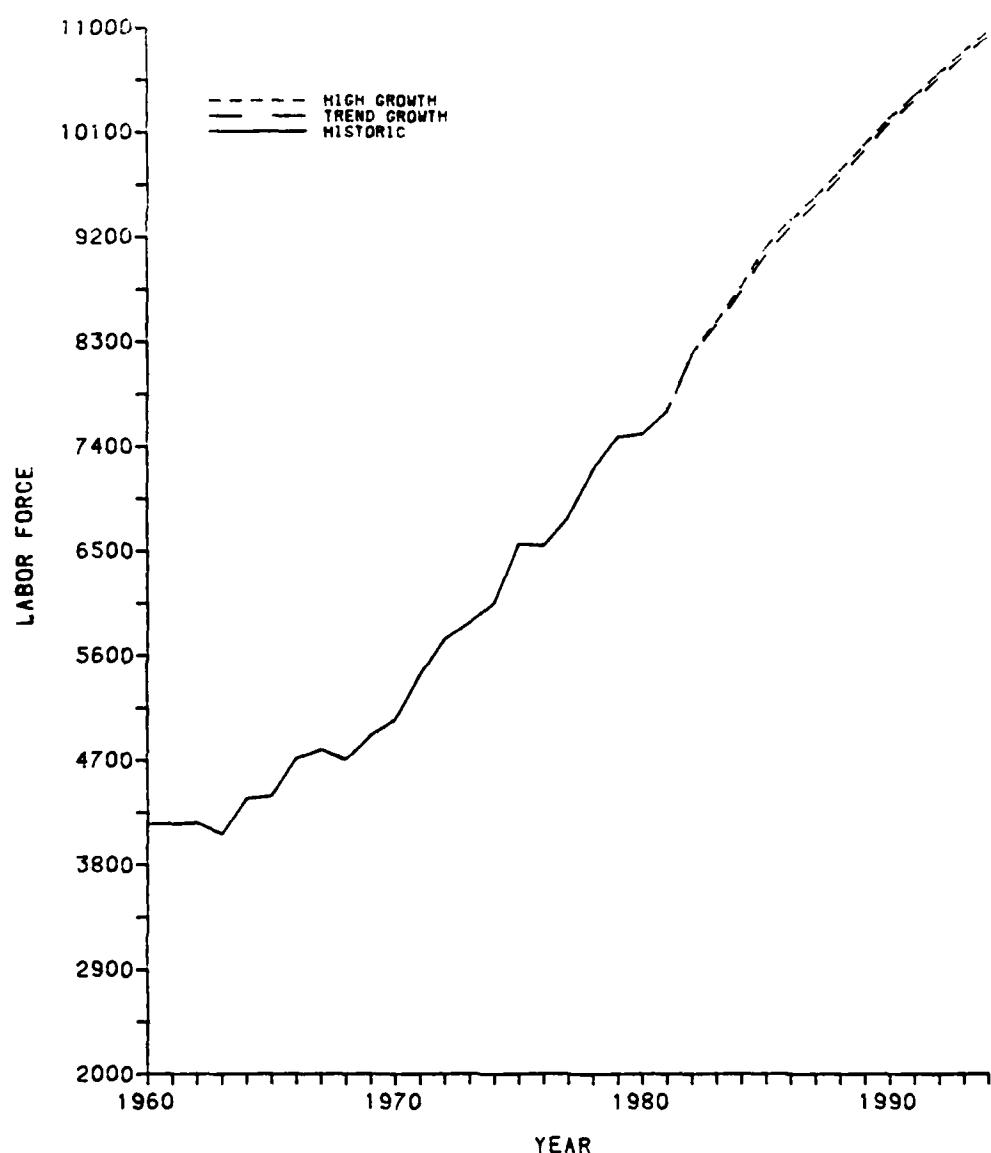


Figure 3.4.1.1-2. Historic and projected baseline labor force in Iron County.

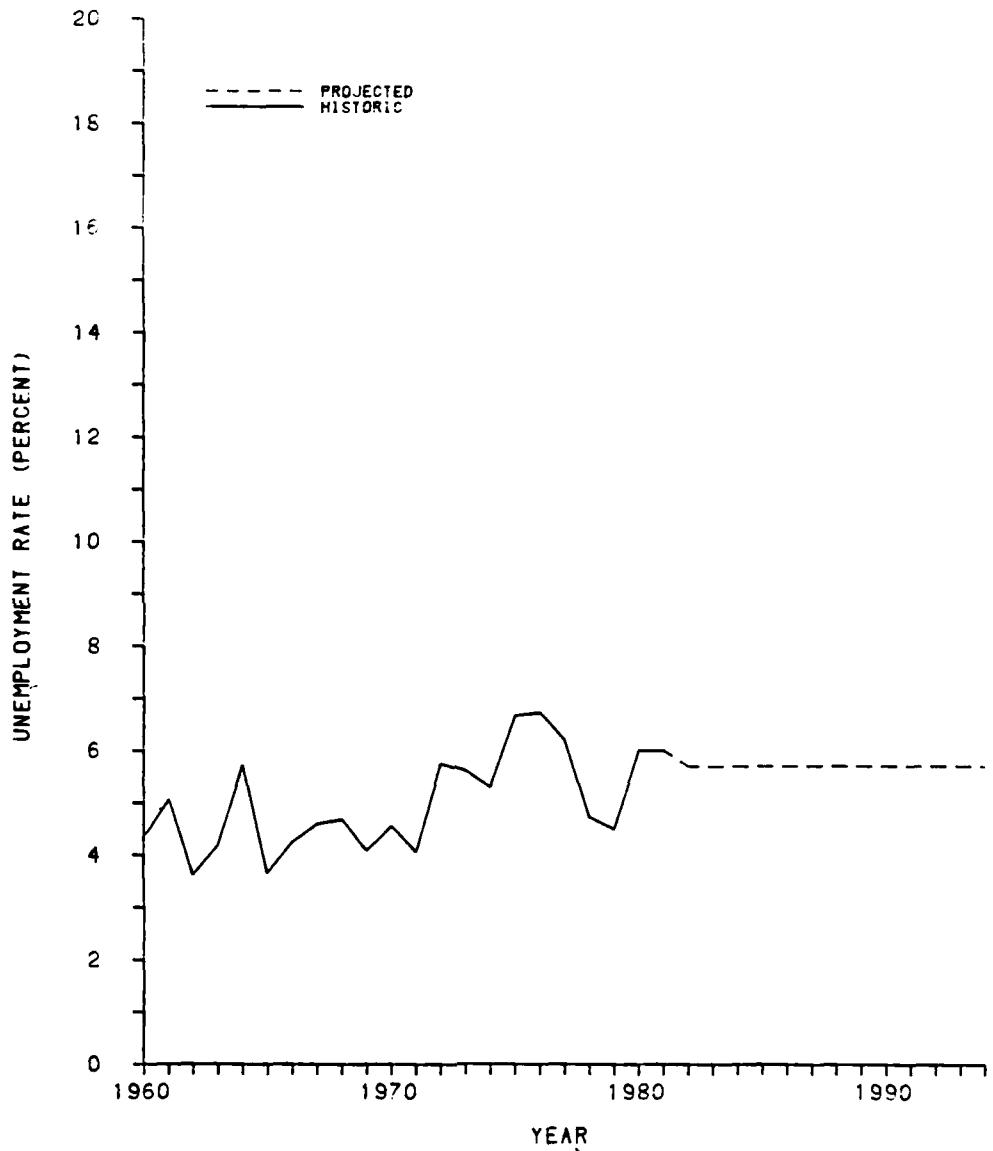


Figure 3.4.1.1-3. Historic and projected baseline rate of unemployment in Iron County.

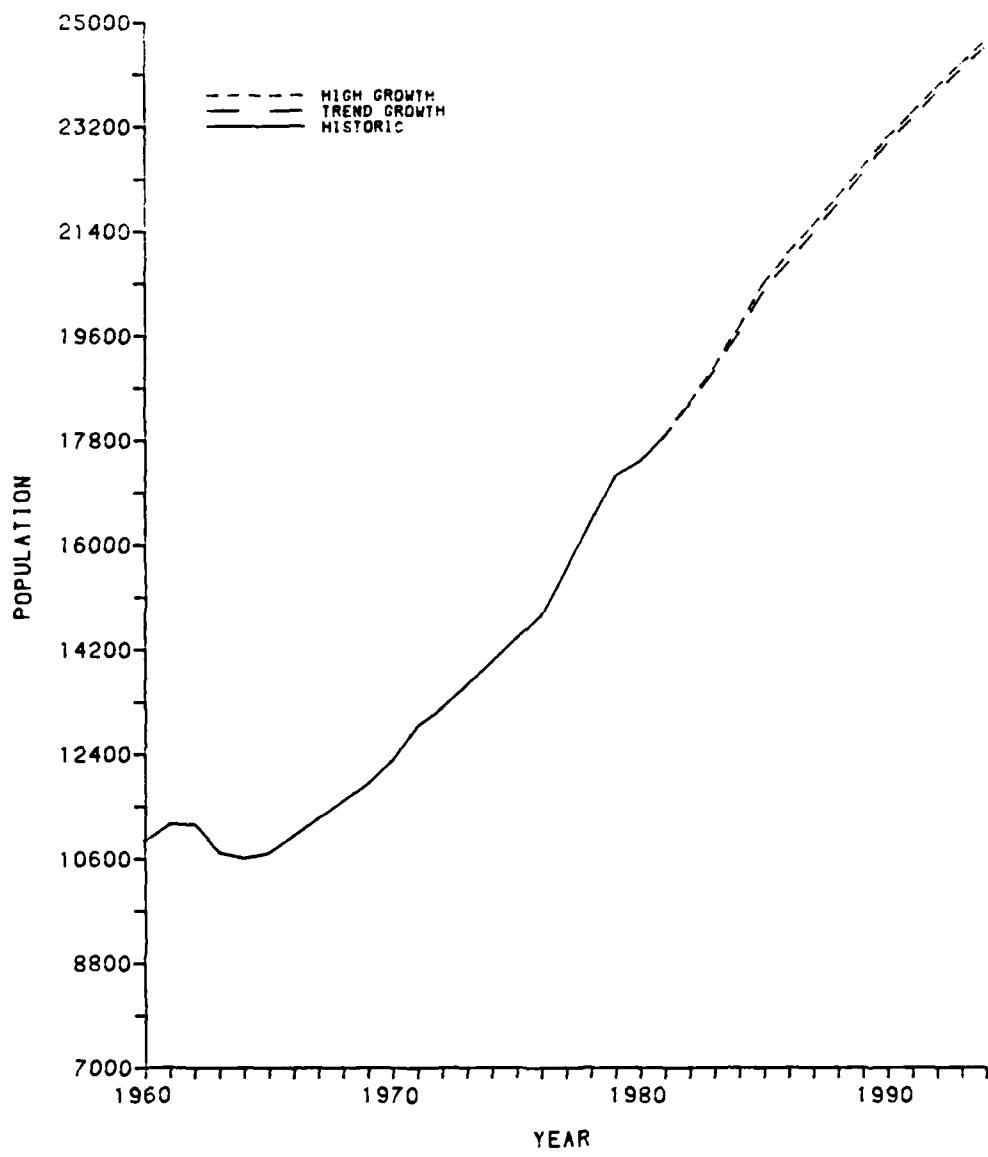


Figure 3.4.1.1-4. Historic and projected baseline population in Iron County.

Surface Water (3.4.1.2.2)

Perennial surface streams which enter the Beryl Enterprise district are fed largely from winter precipitation on adjacent mountains. No perennial streams enter the area around Beryl, but intermittent and external streams reach the valley floor from the adjacent mountains. A few seeps and springs occur, mostly near the mountain valley contacts.

Air Quality (3.4.1.2.3)

A summary of some climatological parameters governing air quality appear in Table 3.4.1.2-1.

Particulate emissions for Iron Valley are 3,800 tons/year from all sources except windblown fugitive dust. The baseline levels in Iron Valley for CO, SO_x, NO_x, and hydrocarbons are listed in Table 3.4.1.2-2. The region surrounding Beryl and the community of Beryl is designated a Class II attainment area for all pollutants.

Beryl receives an average of 11.03 in. of precipitation per year. This precipitation is evenly distributed throughout the year and is not considered an important factor in controlling natural dust emissions.

No air quality monitoring data exist for this area.

Biological Resources (3.4.1.2.4)

Vegetation and Soils

The soils of the potential Beryl OB site belong predominantly to the Dixie-Neola series association, formed on very gently to moderately sloping older alluvial fans and gravelly loam and sandy loam surface textures. They are underlain by a layer of cemented calcium carbonate at 12 to 36 in. (30 to 91 cm). Minor soils in the area are deep with clay loam surface textures. The erosion hazard is moderate to severe, the water holding capacity is low, and the organic matter and nutrient level are low.

The vegetation near the Beryl OB site is characteristic of the Escalante Desert at lower elevations, and typical of montane areas in this region at higher elevations. Figure 3.4.1.2-1 shows major vegetation types occupying areas large enough to be mapped at the given scale. Salt marsh, alkali sink scrub, shadscale scrub, Great Basin sagebrush, and pinyon-juniper woodland occur.

Three salt marsh areas are located in the southern part of the site. These relatively small areas are characterized by salt flats and boggy areas dominated by pickleweed (Salicornia spp.) and saltgrass (Distichlis spicata).

Alkali sink scrub borders the salt marsh areas and is the dominant vegetation type in the valley bottom. Stands of pure black greasewood (Sarcobatus vermiculatus) are characteristic of the flat, level, heavy soils immediately above the salt marshes. On the borders of the valley floor, black greasewood is mixed with shadscale (Atriplex confertifolia) and rabbitbrush (Chrysothamnus spp.).

Table 3.4.1.2-1. Climatological data for the potential operating base sites.

COMMUNITY/ POTENTIAL OB LOCATION	MEAN ANNUAL PRECIPI- TATION (in.)	MEAN ANNUAL VISIBILITY	VISIBLE DUST FRE- QUENCY ¹	AVERAGE ANNUAL MIXING HEIGHT (meters)		AVERAGE ANNUAL WIND SPEED (m/sec) ³	
				MORNING ²	AFTERNOON ²	MORNING ²	AFTERNOON ²
Ely, Nevada	3.33	>70 mi	0.054%	300	2,400	4.0	6.0
Coyote Spring, Nevada	4.55	70 mi	0.200%	300	2,500	4.0	6.0
Beryl, Utah	11.03	70 mi	0.50%	300	2,600	4.0	6.0
Milford, Utah	8.00	70 mi	0.200%	300	2,600	4.0	6.0
Delta, Utah	7.16	70 mi	0.250%	300	2,500	4.0	6.0
Dalhart, Texas	16.33	45-70 mi	1.200%	350	2,100	6.5	8.0
Clovis, New Mexico	17.47	45-70 mi	2.100%	400	2,300	6.2	7.5

2101

¹Percent of hourly observations per year with visible dust; values at Coyote Springs, Beryl, Delta, and Dalhart have been estimated from nearby weather stations.

²Estimated from values at nearby weather stations.

³Wind speed is averaged through the mixing layer.

Table 3.4.1.2-2. Total emissions and emission density levels at potential OB locations.

EMISSIONS/ EMISSION DENSITY LEVELS	POTENTIAL OPERATING BASE LOCATION						CLAVIS NEW MEXICO ¹⁷
	ELY, NEVADA ¹⁴	COYOTE SPRINGS, NEVADA ¹⁵	BERYL, UTAH ¹⁶	MILFORD, UTAH ¹⁷	DELTA, UTAH ¹⁸	DALLAS, TEXAS ¹⁹	
Total Particulate Emissions Tons/yr ²⁰	72,666	115,387	3,800	2,088	4,541	51,323	28,875
Particulate Density Tons/yr/mi ²	37.4	175.3	1	<1	<1	3.1-<10	1-<10
Total SO _x Emissions Tons/yr ²¹	274,426	33,363-274,426	374	158	294	74,728	138,083
SO _x Density Tons/yr/mi ²	30-<100	0.1-<10	<1	<1	<1	3.1-<10	<1
Total NO _x Emissions Tons/yr ²²	12,641	12,641-96,378	1,836	943	1,588	140,323	39,202
NO _x Density Tons/yr/mi ²	<3	0.1-<10	<3	<3	<3	0.1-<30	<3
Total Hydrocarbon Emissions Tons/yr ²³	15,673	15,673-23,071	2,223	1,186	2,114	152,036	38,471
Hydrocarbon Density Tons/yr/mi ²	<3	0.1-<10	<3	<3	<3	0.1-<30	<3
Total CO Emissions Tons/yr ²⁴	79,896	79,896-131,010	11,769	6,139	11,049	1,100,143	112,916
CO Density Tons/yr/mi ²	<10	0.1-<30	<10	<10	<10	0.1-<300	10-<30

1172

¹⁴Particulate data are latest data available from State of Nevada (year unspecified). Particulate data are reported on hydrographic sub-basin basis. Particulate data include windblown fugitive dust sources. Gaseous emission data are from NEDS (1975) and EPA Emissions Trends Report (1977).

¹⁵Coyote Springs sub-basin is part of both AQCR no. 13 and no. 147. Gaseous emission levels are given as range using data from both AQCRs.

¹⁶Particulate and gaseous emission levels reported by county from state of Utah (1976 data). Particulate data do not include contribution from windblown fugitive dust sources. Density values from EPA Emissions Trends Report (1977).

¹⁷Particulate and gaseous emission levels reported for AQCR no. 211 from NEDS (1975). Density values from EPA Emissions Trends Report (1977).

¹⁸Particulate and gaseous emission levels reported for AQCR no. 155 from NEDS (1975). Density values from EPA Emissions Trends Report (1977).

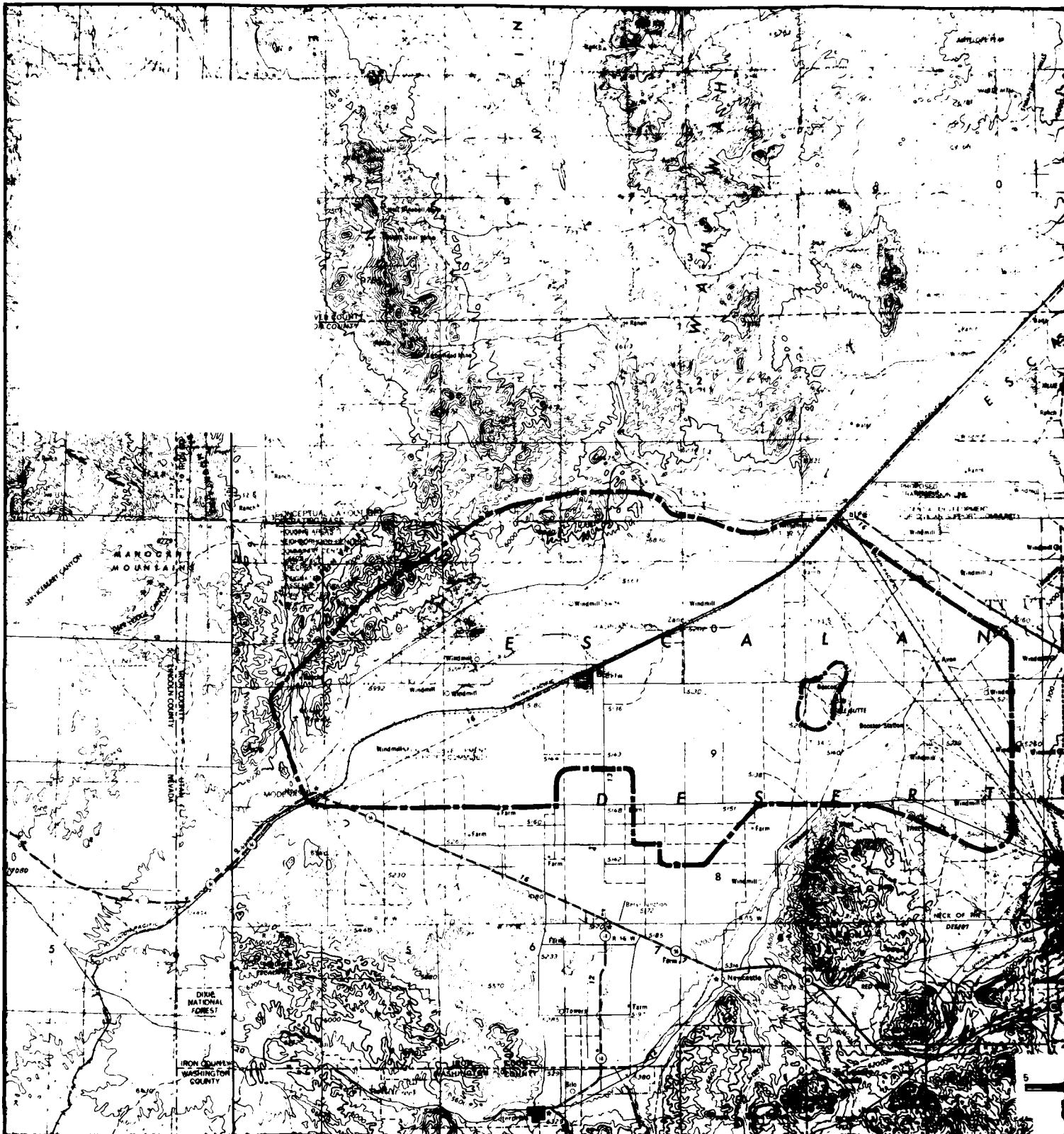


Figure 3.4.1.2-1 Vegetation cover types in

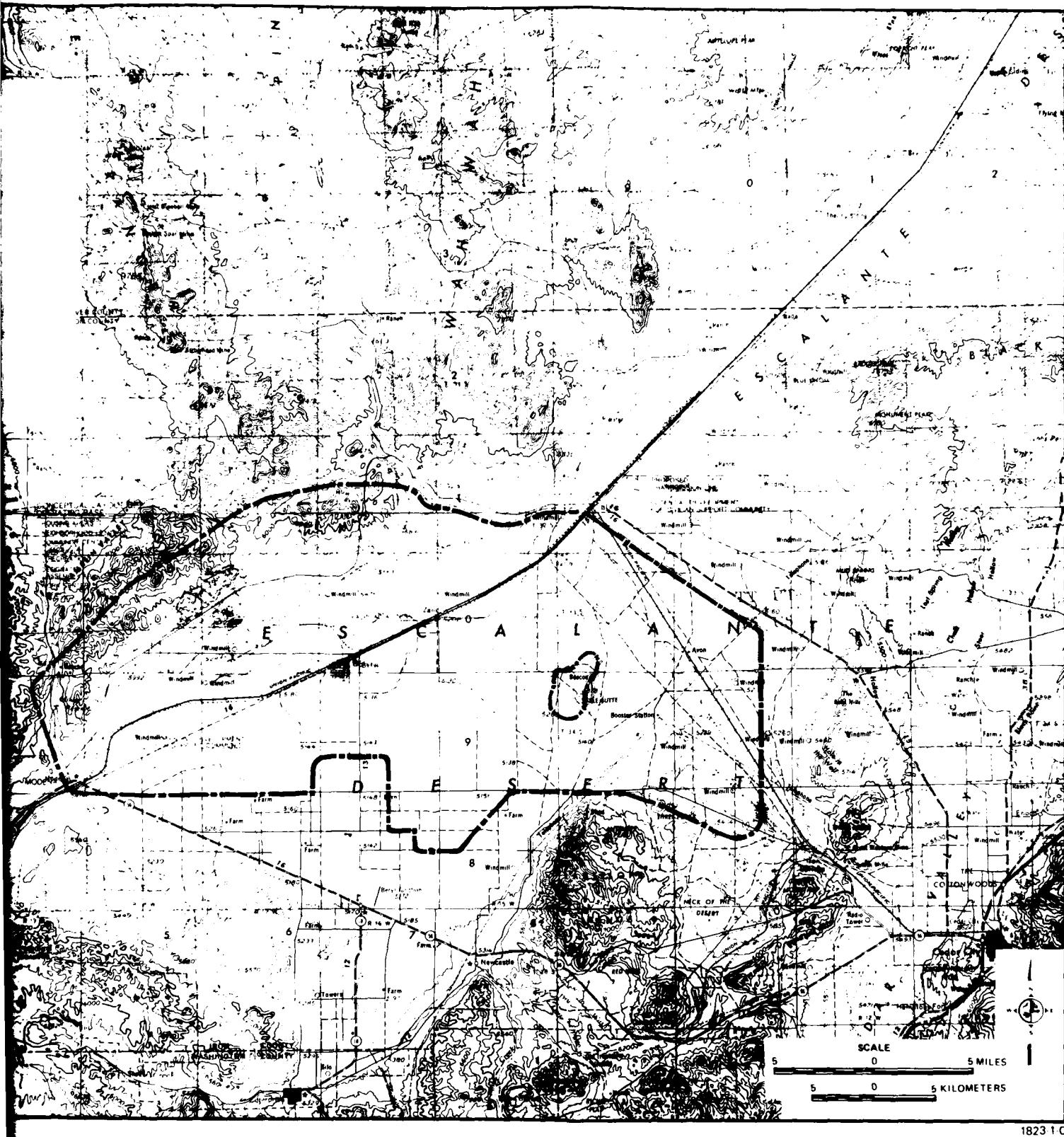


Figure 3.4.1.2-1 Vegetation cover types in the vicinity of Beryl

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An extensive vegetation type of bajadas is shadscale scrub, which typically consists of a mixture of shadscale, greasewood, rabbitbrush, and winterfat (Eurotia lanata). Pure stands of winterfat occur on the lower bajadas.

Great Basin sagebrush occurs immediately above shadscale scrub and extends further up the bajadas. The understory of this community has been seriously reduced in some areas by excessive grazing. Dominant species include big sagebrush (Artemesia tridentata), antelope brush (Purshia tridentata), and various bunchgrass species.

In addition, the valley bottom area supports a mosaic pattern of cropland and disturbance-associated vegetation, including sites dominated by Russian-thistle (Salsola iberica).

Above the sagebrush vegetation, at the highest elevations of the proposed OB site, and above 6,000 ft in the general area pinyon-juniper woodland occurs. This vegetation is composed of Utah juniper (Juniperus osteosperma), single-leaf pinyon (Pinus monophylla), and an understory of hopsage (Grayia spinosa), big sagebrush, rubber rabbitbrush (Chrysothamnus nauseosus), and Mormon tea (Ephedra spp). Shifts in dominance occur locally in response to topographic and geographic variances. In general, junipers dominate the lowest elevations of this type, with mixed juniper, pinyon woodlands, and pure pinyon woodlands dominating the upper elevations.

Above pinyon-juniper woodland on north slopes in montane brush, vegetation is dominated by Rocky Mountain oak (Quercus gambelii), black sagebrush, serviceberry, and curl-leaf mountain mahogany (Cercocarpus ledifolius). A small stand of ponderosa pine (Pinus ponderosa) occurs on rocky slopes south of Enterprise Reservoir, in the southwest corner of the Dixie National Forest.

Wildlife

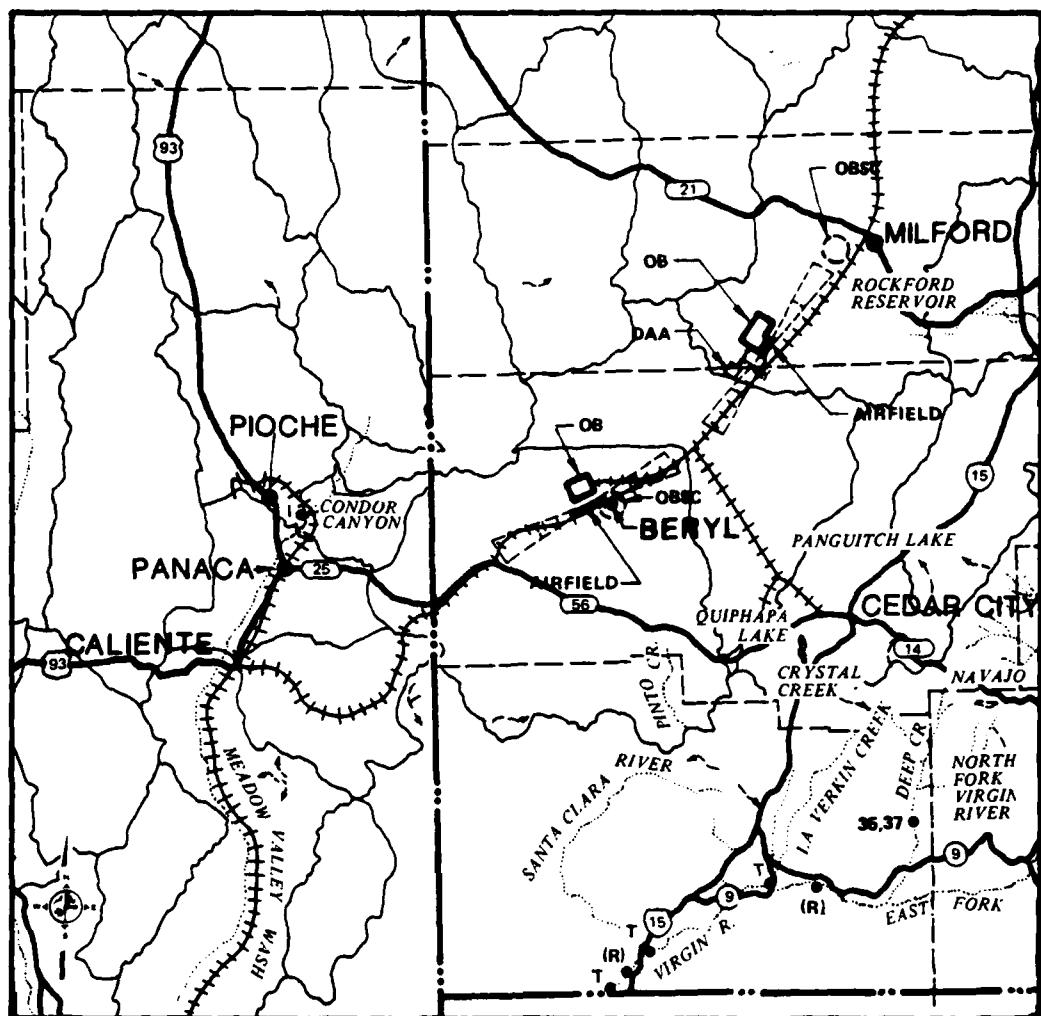
The site is in the southernmost range of pronghorn antelope in Utah. The range extends north up the Escalante Desert and into the Wah Wah Valley. Mule deer occur in low numbers in the Wah Wah mountains and the Needle Range North of the OB site. The summer range of transplanted population of elk occurs about 5 mi north in the Needle Range.

Aquatic Species

Siting and construction of the proposed OB at Beryl will not directly impact any aquatic species, except those which inhabit intermittent springs, streams and washes. The nearest fishing opportunities are in the mountains to the south and east. Minersville Reservoir, Beaver River, Virgin River and the Pinto Creek drainage will supply game fishing opportunities.

Protected Species

No protected or recommended protected aquatic species occur near Beryl (Figure 3.4.1.2-2). The nearest locations are 30 mi to the west for the recommended protected Big Spring spinedace, and up to 50 mi South-Southeast for the federally protected woundfin, state protected roundtail chub, and recommended



LEGEND

PROTECTED FISH SPECIES FOR NEVADA

- I BIG SPRING SPINEDACE
- S VIRGIN RIVER ROUNDTAIL CHUB
- T WOUNDFIN*

RECOMMENDED PROTECTED FISH SPECIES FOR NEVADA

(R) VIRGIN SPINEDACE

RECOMMENDED PROTECTED INVERTEBRATES MOLLUSKS

- 35 ZION CANYON PHYSA

INSECTS

- 37 VIRGIN RIVER NET WINGED MIDGE

* FEDERALLY PROTECTED

SCALE

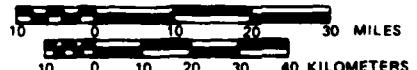


Figure 3.4.1.2-2. Locations of protected and recommended protected aquatic biota near Beryl and Milford.

protected virgin spinedace. The base is located approximately 10 mi south of the major transplant site of the Utah prairie dog, a federally listed endangered species, in Pine Valley, Utah. The DTN passes directly through this transplant population. No rare plant species or protected fish species are known from the immediate area.

Wilderness and Significant Natural Areas

Recommended and designated wilderness study areas as well as significant natural areas located within 50 mi of the potential Beryl OB site are listed in Table 3.4.1.2-3. Steamboat Mountain natural area is the closest, and is located approximately 9 mi from the proposed base.

Human Environment (3.4.1.3)

Employment (3.4.1.3.1)

Tables 3.4.1.3-1 and 3.4.1.3-2 highlight detailed employment characteristics of Iron County. The former table indicates the relative dependence of the county's economy on the government sector which alone, comprised 27 percent of the county's total employment in 1977. Other sectors, notably manufacturing and services traditionally dominate a well-balanced economic base; however in Iron County, manufacturing employment comprised only 6 percent in 1977 and services, 10 percent. These percentages were well below both the state and national averages for employment shares in these sectors.

Table 3.4.1.3-2 presents 10-year employment growth figures and indicates that the number of jobs in Iron County increase by almost one third between 1967 and 1977. The government sector had an average annual growth rate of 4 percent during that period and continuously provided about one quarter of the total number of jobs in the county. The services industry grew by 5 percent per year while construction and manufacturing recorded average annual growth rates of 4 percent. Agricultural employment declined by about 1 percent per year while the mining sector remained relatively unchanged.

The baseline labor force for Iron County is traced graphically from 1960-1994 in Figure 3.4.1.1-2. The amount of workers in the labor force has increased steadily over the past two decades, from 4,150 in 1960 to 7,504 in 1980. This increase is expected to continue into the future regardless of anticipated major projects in the county. The high growth scenario accounts for labor force increases from major projects that are anticipated to occur during the projected period and is just slightly higher than the trend growth scenario. Both high growth and trend growth projections show that a county labor force of nearly 11,000 would be reached by 1994.

The Iron County baseline unemployment rates are shown graphically from 1960-1994 in Figure 3.4.1.1-3. There has been a slight increasing trend over the 1960-1980 period. In the 1960's, the rate of unemployment was about 4.5 percent, in 1972 it increased to 6 percent, and in 1976 it jumped to 7 percent. The rate is currently about 6 percent and is expected to drop slightly and then stabilize at about 5.8 percent through 1994.

Table 3.4.1.2-3. Potential wilderness and significant natural areas within a 50 mi radius (80 km) from the potential Beryl OB site.

STATE	POTENTIAL WILDERNESS AREAS		STATE	SIGNIFICANT NATURAL AREAS	
	MILES FROM OB SITE	KM FROM OB SITE		MILES FROM OB SITE	KM FROM OB SITE
Nevada			Nevada		
White Rock Range	26	42	Gleason Canyon	28	45
Parsnip Peak	34	55	Beaver Dam	32	51
Grapevine Spring	48	77			
Table Mountain	42	68			
Utah			Utah		
Wah Wah Mountains	22	35	Zion National Park	38	61
White Rock Range	37	60	Cedar Breaks	50	80
Ashdown Gorge	47	76	Steamboat Mountain	9	14
Red Mountain	45	72	Indian Peak	49	78
Spring Canyon	36	58	Desert Range		
Taylor Creek Canyon	42	68	Experimental Farm		
La Verkin Creek Canyon	42	68			
Red Butte	47	75			
Beartrap Canyon	45	72			
Home Valley Knoll	49	79			

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Table 3.4.1.3-1. Total employment and percent share by major economic sectors for selected counties in Utah, 1977.

COUNTY	TOTAL, EMPLOYMENT 1977	COUNTY % OF TOTAL EMPLOYMENT	AGRICULTURE SHARE (%)	MINING SHARE (%)	CONSTRUCTION SHARE (%)	MANUFACTURE SHARE (%)	SERVICES SHARE (%)	GOVERNMENT SHARE (%)
Beaver	1,726	0.4	18.1	1.3	2.6	8.6	(D)	26.4
Davis	50,061	10.8	2.2	0.1	4.6	9.3	9.2	51.1
Iron	6,517	1.4	9.4	3.9	5.0	6.2	9.8	26.7
Juab	2,150	0.5	13.2	(D)	(D)	25.8	7.1	20.7
Millard	3,416	0.7	30.9	1.8	1.2	6.8	6.4	21.4
Salt Lake	272,043	58.9	0.5	2.3	5.9	13.9	16.8	17.3
Tooele	10,959	2.4	3.1	0.6	10.0	9.7	4.5	57.1
Utah	59,393	12.9	4.6	7.0	6.1	20.0	20.6	16.6
Washington	6,365	1.4	6.9	0.4	7.0	7.9	11.9	21.4
Weber	49,011	10.6	2.3	0.1	4.8	11.4	14.5	30.7
Study Area Total	461,641	100.0	2.0	1.6	5.7	13.6	15.6	23.5
Utah State Total	550,214		3.7	2.7	5.8	13.5	14.7	23.2
Nevada State Total	348,495		1.4	1.2	5.7	4.3	37.3	18.4
Two State Total	898,709		1.4	1.2	5.7	4.3	37.1	18.4
U.S.	97,898,874		4.2	4.2	4.0	20.1	17.4	18.2

(D) Not shown to avoid disclosure of confidential data.

Source: Dept. of Commerce, April 1979.

Table 3.4.1.3-2. Employment growth by sector, selected counties in Utah, 1967 to 1977.

COUNTY	TOTAL		AGRICULTURE		MINING		CONSTRUCTION		MANUFACTURING		SERVICES		GOVERNMENT		
	1967	1977	A ¹	1967	1977	A	1967	1977	A	1967	1977	A	1967	1977	
Beaver	1,625	1,726	0.6	340	312	-0.9	(D) ²	23	(D)	45	(D)	149	(D)	129	(D)
Davis	40,034	50,061	2.3	1,231	1,084	-1.3	49	14	-11.8	710	2,323	12.6	3,122	4,662	4.1
Iron	4,439	6,517	3.8	671	610	-0.9	244	255	0.4	176	327	6.4	270	405	4.1
Juab	2,116	2,150	0.2	343	284	-1.9	108	(D)	(D)	(D)	(D)	436	554	2.4	97
Millard	2,944	3,416	1.5	1,073	1,055	-0.2	(D)	62	(D)	52	42	-2.1	61	232	14.3
Salt Lake	180,651	172,043	4.2	1,604	1,443	-1.1	5,418	6,263	1.5	7,148	16,143	8.5	25,832	37,812	3.9
Tonka	11,514	10,959	-0.5	347	341	-0.2	136	70	-6.4	105	1,094	18.8	554	1,066	6.8
Utah	37,804	50,393	4.6	3,192	2,708	-1.6	225	417	6.4	1,543	3,620	8.9	8,317	11,893	3.6
Washington	3,950	6,365	4.9	579	442	-2.7	(D)	28	(D)	105	444	8.6	187	503	10.4
Wasatch	44,667	49,011	0.9	1,335	1,147	-1.5	17	49	11.2	1,523	2,344	4.4	4,855	5,590	1.4
State Total	391,289	550,214	3.5	23,091	20,244	-1.3	10,330	14,825	3.7	13,676	31,814	8.8	50,216	71,997	4.0
U.S. Total (in millions)	82.6	97.8	1.7	4.6	4.2	-1.2	.6	.8	3.0	3.3	3.9	1.6	19.5	19.7	0.1

¹A = Average annual growth rate.

²(D) = Not shown to avoid disclosure of confidential information.

Source: BEA, April, 1978.

Income and Earnings (3.4.1.3.2)

Adjusted for inflation, total earnings in Iron County grew by 3 percent per year over the 1967-1977 period (Table 3.4.1.3-3). The government sector experienced the largest aggregate and percentage earnings growth, increasing in real terms from \$10 million in 1967 to \$16 million in 1977 at an average annual growth rate of 5 percent. Agricultural earnings decreased by about \$6 million (an average annual decline of almost 17 percent) during the same period. Other industries increased earnings by 3-5 percent annually except the mining sector which averaged only a 1-percent rate of growth per year.

Table 3.4.1.3-4 highlights per capita income and earnings shares by major industry in Iron County. The county's 1977 per capita income of \$4,693 was about 79 percent that of Utah's and only 67 percent of U.S. per capita income. By industrial source, government contributed almost one-third of Iron County's total 1977 earnings. The agricultural share of total earnings was only 2 percent, well below what employment in this industry would have indicated. This implied that agricultural workers received lower compensation than workers in other industries.

Public Finance (3.4.1.3.3)

Principal jurisdictions in the area include Iron County, Cedar City, and the Iron County School District. In 1979, assessed valuation was \$73.8 million in Iron County and \$26.5 million in Cedar City (Table 3.4.1.3-5). Intergovernmental transfers account for 43.8 percent and 55.1 percent of general fund revenues in Cedar City and Iron County, respectively (Tables 3.4.1.3-6 and 3.4.1.3-7). Other revenue sources include property tax, fines and fees, and licenses and permits. (County of Iron, Statement of General Fund Revenues and Expenditures, Fiscal Year 1977; Cedar City Statement of General Fund Revenues and Expenditures, 1977).

Public works constitute the largest single expenditure category in both Cedar City and Iron County, 32.7 percent and 34 percent of total general fund expenditures, respectively. Iron County devotes 31.3 percent to administrative disbursements and Cedar City, 15.1 percent. Both jurisdictions spend an average of 20 percent of the general fund on public safety.

The Iron County School District receives over 64 percent of its revenues from state contributions, excluding capital outlay and debt service, and 30 percent from the county (Table 3.4.1.3-7). Instruction expenses account for the largest single outlay (approximately 59 percent of total expenditures), excluding capital outlay and debt service (Table 3.4.1.3-8). Fixed charges (insurance, pension payments) and operation and maintenance of the physical plant account for another 31 percent of expenditures. (Annual Report of the Superintendent of Public Instruction, 1978).

Population (3.4.1.3.4)

Beryl, with a population of about 30, is located in an isolated rural setting in western Iron County, Utah.

In 1978, the population of Iron County was estimated at 16,400, an increase of 35 percent since 1970. About 80 percent of the county population lives in Cedar City, which had approximately 13,000 residents in 1979, up 31.1 percent over the

Table 3.4.1.3-3. Utah earnings change by economic sector, 1967-1977 (in millions of 1977 dollars).

COUNTY	TOTAL EARNINGS		AGRICULTURE			MINING			CONSTRUCTION			
	1967	1977	GROWTH RATE	1967	1977	GROWTH RATE	1967	1977	GROWTH RATE	1967	1977	GROWTH RATE
Beaver	13.26	13.9	.0.5	2.5	.95	-9.2	(D)	.48	(D)	(D)	1.13	(D)
Davis	466.5	602.5	2.6	3.85	3.63	-0.6	.72	.38	-6.2	11.42	30.6	13.2
Iron	39.94	54.18	3.1	5.8	.96	-16.5	3.6	4.03	1.1	2.8	4.52	4.9
Juab	15.96	14.33	-1.1	1.68	.83	-6.8	2.96	.2	-21.6	.36	.6	1.3
Millard	18.43	22.3	1.9	5.8	4.65	-2.2	(D)	.97	(D)	.67	.81	1.9
Salt Lake	1957.3	3108.3	4.7	9.29	7.31	-2.4	83.84	141.69	5.4	120.2	271.3	8.5
Tooele	129.2	142.6	1.0	.65	1.78	10.6	1.95	.43	-14.0	3.13	21.1	21.0
Utah	370.3	640.3	5.6	14.49	9.52	-4.1	3.2	6.6	7.5	24.39	53.7	9.3
Washington	28.36	49.96	5.8	3.25	2.35	-3.2	(D)	.39	(D)	2.55	5.51	8.0
Weber	412.1	492.9	1.3	6.74	2.37	-9.9	.1	1.27	28.9	26.39	36.9	3.4
State	6010.5	6010.5	4.2	119.2	82.4	-3.6	155.4	310.15	7.2	226.3	542.65	9.1
U.S.	921,344	1,164,755	2.4	31,950.7	26,163	-2.0	9,715.6	10,115	6.4	54,730.6	69,617	2.4
MANUFACTURING												
COUNTY	1967	1977	GROWTH RATE	1967	1977	GROWTH RATE	1967	1977	GROWTH RATE	1967	1977	GROWTH RATE
Beaver	(D)	.96	(D)	.94	.9	0.0	2.29	3.03	2.8			
Davis	43.68	69.88	4.8	20.04	48.38	9.2	343.5	349.67	0.2			
Iron	2.19	1.71	5.4	4.48	6.14	3.2	9.8	15.25	4.9			
Juab	4.53	5.16	1.3	.64	1.13	5.8	2.66	3.08	1.5			
Millard	.52	1.45	10.8	1.44	1.53	0.9	4.67	5.57	1.8			
Salt Lake	143.1	495.5	3.7	297.8	402.3	5.2	301.6	458.4	4.3			
Tooele	7.22	17.91	9.5	3.03	4.06	3.0	104.3	36.14	-1.9			
Utah	118.2	202.0	6.5	75.85	145.3	6.7	78.91	87.6	4.1			
Washington	1.44	5.19	14.1	3.83	7.23	6.6	7.47	11.42	4.3			
Weber	57.66	69.27	1.8	55.86	72.96	2.7	149.2	154.7	0.4			
State	657.7	1011.2	4.4	510.	816.5	5.3	1102.8	1339.8	2.0			
U.S.	269,026	305,747	1.3	135,753	193,246	3.6	151,707	199,470	2.8			
SERVICES												
COUNTY	1967	1977	GROWTH RATE	1967	1977	GROWTH RATE	1967	1977	GROWTH RATE	1967	1977	GROWTH RATE
Beaver	(D)	.96	(D)	.94	.9	0.0	2.29	3.03	2.8			
Davis	43.68	69.88	4.8	20.04	48.38	9.2	343.5	349.67	0.2			
Iron	2.19	1.71	5.4	4.48	6.14	3.2	9.8	15.25	4.9			
Juab	4.53	5.16	1.3	.64	1.13	5.8	2.66	3.08	1.5			
Millard	.52	1.45	10.8	1.44	1.53	0.9	4.67	5.57	1.8			
Salt Lake	143.1	495.5	3.7	297.8	402.3	5.2	301.6	458.4	4.3			
Tooele	7.22	17.91	9.5	3.03	4.06	3.0	104.3	36.14	-1.9			
Utah	118.2	202.0	6.5	75.85	145.3	6.7	78.91	87.6	4.1			
Washington	1.44	5.19	14.1	3.83	7.23	6.6	7.47	11.42	4.3			
Weber	57.66	69.27	1.8	55.86	72.96	2.7	149.2	154.7	0.4			
State	657.7	1011.2	4.4	510.	816.5	5.3	1102.8	1339.8	2.0			
U.S.	269,026	305,747	1.3	135,753	193,246	3.6	151,707	199,470	2.8			
GOVERNMENT												
COUNTY	1967	1977	GROWTH RATE	1967	1977	GROWTH RATE	1967	1977	GROWTH RATE	1967	1977	GROWTH RATE
Beaver	(D)	.96	(D)	.94	.9	0.0	2.29	3.03	2.8			
Davis	43.68	69.88	4.8	20.04	48.38	9.2	343.5	349.67	0.2			
Iron	2.19	1.71	5.4	4.48	6.14	3.2	9.8	15.25	4.9			
Juab	4.53	5.16	1.3	.64	1.13	5.8	2.66	3.08	1.5			
Millard	.52	1.45	10.8	1.44	1.53	0.9	4.67	5.57	1.8			
Salt Lake	143.1	495.5	3.7	297.8	402.3	5.2	301.6	458.4	4.3			
Tooele	7.22	17.91	9.5	3.03	4.06	3.0	104.3	36.14	-1.9			
Utah	118.2	202.0	6.5	75.85	145.3	6.7	78.91	87.6	4.1			
Washington	1.44	5.19	14.1	3.83	7.23	6.6	7.47	11.42	4.3			
Weber	57.66	69.27	1.8	55.86	72.96	2.7	149.2	154.7	0.4			
State	657.7	1011.2	4.4	510.	816.5	5.3	1102.8	1339.8	2.0			
U.S.	269,026	305,747	1.3	135,753	193,246	3.6	151,707	199,470	2.8			

Table 3.4.1.3-4. Per capita income and earnings shares by economic sector, selected Utah counties, 1977.

COUNTY	1977 PER CAPITA INCOME	TOTAL 1977 EARNINGS (\$000s)	AGRI-CULTURE SHARE (%)	MIN-ING SHARE (%)	CON-STRUC-TION SHARE (%)	MANU-FACT-URING SHARE (%)	SERV-ICES SHARE (%)	GOVERN-MENT SHARE (%)
Beaver	\$5,114	\$ 13,900	6.9	3.4	6.2	6.9	5.8	21.8
Davis	5,860	602,505	0.6	0.1	6.6	11.6	6.0	58.0
Iron	4,693	54,175	1.8	7.4	6.4	6.8	11.3	29.4
Juab	3,797	14,328	5.6	4.9	2.8	36.0	7.9	21.5
Millard	3,978	22,296	20.8	4.3	3.6	6.5	7.0	25.0
Salt Lake	6,712	3,108,320	0.2	4.6	8.7	15.9	15.8	14.7
Tooele	5,684	142,636	1.2	0.3	14.8	12.6	2.8	60.4
Utah	4,854	640,317	1.5	1.0	9.2	31.5	22.7	13.7
Washington	4,381	49,961	4.7	0.6	11.0	10.8	14.5	22.9
Weber	6,156	492,894	0.5	0.3	7.5	14.0	14.6	31.4
State	\$5,943	\$6,010,516	1.4	5.2	9.0	16.8	14.2	22.3
United States	\$7,026	\$1,164,755 ¹	2.2	1.6	6.0	26.2	16.6	17.1

¹ (\$millions)

Source: BEA, 1979.

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Table 3.4.1.3-5. Assessed valuations, indebtedness limitations, and reserve bonding capacities, 1979.

JURISDICTION	ASSESSED VALUE	INDEBTEDNESS LIMITATION	OUTSTANDING G.O. BONDS	RESERVE BONDING CAPACITY
Iron County	\$ 73,797,487	\$ 5,903,799	\$ 220,000	\$ 5,683,799
School District ¹	\$ 62,529,093	\$10,004,655	\$ 6,645,000	\$ 3,359,655
Cedar City	\$ 26,459,230	\$ 4,233,477	\$ 2,432,000	\$ 1,801,477

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¹School Year 1978-79

Source: (a) Auditors Office, Iron County and Cedar City, 1979.
 (b) Statistical Review of Government in Utah, 1979 Edition.
 (c) Annual Report of the State Superintendent, Utah State Office of Education, 1978-1979.

Table 3.4.1.3-6. General fund revenue and expenditures, Iron County, Utah, select years 1977 and 1978.

REVENUES	1977	1978
Property Tax	\$ 500,000	\$ 329,910
License and Permit	7,159	10,349
I-G Revenues	973,276	926,912
Fines and Fees	289,064	314,050
Other	23,829	100,228
Total Revenues	1,793,781	1,681,449
EXPENDITURES		
Administration	406,639	506,745
Public Safety	166,681	300,968
Health and Welfare	63,247	92,258
Public Works	537,050	550,487
Parks and Recreation	24,516	30,667
Other	43,728	43,202
Transfers-to	216,725	94,218
Total Expenditures	1,458,586	1,618,545

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Source: Iron County, *General Fund Statement of Revenues and Expenditures, 1977 and 1978.*

Table 3.4.1.3-7. Summary of revenues, all funds
 Iron County School District,
 1977-1978.

REVENUES	IRON
Maintenance and Operating Fund	
Local Revenue	\$ 1,324,693
Property Taxes	1,237,971
Other	86,722
State Revenues	2,841,104
Basic School Program	2,031,863
Other	808,241
Federal Revenues	223,346
Transfer Payments-In State	5,775
Total Maintenance and Operating Fund	4,394,918
Capital Outlay and Debt Service Fund	
Local Revenues	1,183,876
Property Taxes	961,858
Other	222,018
State Revenue	—
Federal Revenue	4,500
Non-Revenue	3,407,598
Sale of Bonds	3,400,000
Other	7,598
Total Capital Outlay and Debt Service Fund	4,595,974
School Food Services Fund	328,079
Other Funds	353,953
Total All Funds	9,672,924

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Source: Utah Office of the State Superintendent of
 Public Instruction, 1978. 1977-78 Annual
 Report of the State Superintendent.

Table 3.4.1.3-8. Summary of expenditures, by funds, Iron County School District, 1977-1978.

EXPENDITURES	IRON
Maintenance and Operating Fund	
Administration	\$ 121,268
Instruction	2,647,251
Health Services	14,528
Transportation	160,414
Operation of Plant	377,155
Maintenance of Plant	228,323
Fixed Charges	840,258
Other	73,132
Total Maintenance and Operating Fund	4,462,329
Capital Outlay and Debt Service Funds	
Capital Outlay	1,872,937
Sites	181,789
New Buildings	1,427,275
Remodeling	28,598
Other	235,275
Debt Service	530,715
Total Capital Outlay and Debt Service Funds	2,403,652
Food Service Fund	322,092
Other Funds	356,866
Total - All Funds	7,544,939

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Source: Utah Office of the State Superintendent of Public Instructions, 1978. 1977-1978 Annual Report of the State Superintendent.

1970 population of 8,946. Several small communities, primarily Modena (pop. 25) and Newcastle (pop. 100), are located near Beryl.

Housing (3.4.1.3.5)

Iron County has experienced moderate growth in housing over the last two decades. From 1960 to 1970, the county's housing supply grew at an average rate of 1.2 percent, adding 400 housing units to reach 3,620 units by 1970. In the next six years, housing growth picked up to a 3.7 average annual growth rate and the county's housing stock reached 4,500 units in 1976. The proportion of the county's housing stock in single-family units declined slightly from 72 percent in 1970 to 70 percent in 1976, while the share of multi-family units and mobile homes increased from 28 to 30 percent in the same period. In 1976, mobile homes constituted an estimated 10 percent of the housing in Iron County, totaling some 450 units. An average of 145 conventional housing units were added each year from 1970 to 1979, with a maximum yearly production of about 300 units in 1978. In 1970, 71 percent of the housing units were owner-occupied, and nearly 70 percent of Iron County's housing was located in Cedar City.

Community Infrastructure (3.4.1.3.6)

Organization

County government in Utah is made up of three elected county commissioners (two commissioners for 4-year terms and one commissioner for a 2-year term). Other elected county officials include a sheriff, clerk, recorder, assessor, treasurer, and county attorney. Incorporated cities in Iron County are Paragonah, Parowan, Enoch, Cedar City, Kanarraville, and Brian Head. Parowan is the county seat and Cedar City the principal city.

Iron County also has County Housing Authority, created primarily to provide housing and related services to migrant farm workers in the Beryl crossroads farm area.

Education

During the 1978-1979 school year, the Iron County School District had a total enrollment of 4,052 pupils and employed 191 teachers. These enrollments are distributed among six elementary schools, which have a combined total enrollment of 2,450 pupils and three junior/senior high schools, with total enrollments of 1,602 pupils. Surplus capacity in school facilities is negligible.

Health Care

One comprehensive hospital facility, containing 73 beds, is located in Cedar City, resulting in a ratio of 5.6 beds per 1,000 population in 1977. In addition, there are four private medical clinics. Medical services are provided by 15 physicians, 10 dentists, 25 RNs, 10 LPNs, 2 mental health workers, several optometrists, veterinarians, and other health-care specialists. Utilization rates at the hospital are less than 50 percent.

Police Protection

The Cedar City police department has approximately 15 full-time officers.

Fire Protection

The Cedar City fire department consists of 3 full-time and 32 volunteer firemen operating from one station. The city has a fire insurance rating of 5 on a national scale of 1 to 10. Major equipment consists of two 1,250-gallon pumbers, two 750-gallon pumbers, two brush trucks, and one snorkel truck.

Water Supply and Distribution

Cedar City acquires its water from six wells and 14 springs. Capacity is 7.6 mgd while present use is 6.7 mgd. The city has purchased rights to surface water from Coal Creek, and annual rights to 2,000 acre-ft from Kolab Reservoir. Surface or reservoir water is not suitable for culinary use without treatment.

Peak-period water rights for Cedar City total 7,723 gpm, and are substantially greater than the 1979 peak-day demand of 4,657 gpm. Physical facilities are only able to pump 5,309 gpm from the springs and wells, 14 percent more than the 1979 peak demand. Should any of the wells serving culinary demand be taken out of service, peak demand may not be met.

Wastewater Collection and Treatment

The wastewater collection system in Cedar City was constructed in the 1930s and has expanded to meet growth requirements. This system is in good condition and does not experience inflow or infiltration problems. Average daily flow is 100 gpcd.

The plant was designed for a population equivalent of 19,000 persons, or 2.26 mgd. Performance is less than desirable. The present flow rate is estimated to be 1.8 mgd.

Solid Waste

Cedar City has a 20-acre sanitary landfill. Five acres of this site are used.

Parks and Recreation

Cedar City provides a variety of public and private recreational facilities including an auditorium, swimming pool, park and playgrounds, a nine-hole golf course, baseball fields, clubs, lodges, a cinema, a municipal library, a 12-lane bowling alley, a race track, and rodeo grounds. Resource based recreational facilities within 50 mi of the OB site are considered most likely to be used by residents. These include:

Parklands

There are a number of parklands surrounding the proposed Beryl OB site. The majority of these parklands are administered by the National Park Service, Utah

Division of Parks and Recreation and National Forest Service. One national park, Zion, and one national monument, Cedar Breaks, are within 50 mi of the proposed OB. Zion and Cedar Breaks are well within a day's driving distance and may thus be expected to receive a great deal of the expected increased parkland visitation for the purpose of hiking, sightseeing, snowmobiling, picnicking, snow skiing and camping. Bryce Canyon is more than 50 mi east of the OB site and thus beyond the boundary of the assumed sphere of influence. However, because of its recognized natural beauty and many hiking trails this park is expected to receive approximately the same order of visitor use as Zion and Cedar Breaks.

There is an abundance of National Forest Land to the east and southwest of Beryl. The Dixie National Forest has four campgrounds, two boat launching sites, at least two snowmobile trails and one downhill skiing resort (Brianhead) (Table 3.4.1.3-9). There are three Utah state parks in the vicinity; Minersville Lake, Snow Canyon and Gunlock Lake State Beach. All three of these parks are approximately 60 mi from Beryl. Gunlock and Minersville Lakes add to the limited supply of water related facilities for boating, swimming, and waterskiing. There are three Nevada State Parks within the assumed sphere of influence, Cathedral Gorge, Echo Canyon and Spring Valley. All three of these state parks are popular camping areas. Coral Pink Sand Dunes State Reserve has a small area (2.3 acres) reserved for dunebug riding. This area is well outside of the sphere of influence, however, the dunes outside of the reserve are a popular ORV recreation site (Utah Outdoor Recreation Agency 1976).

Snow Related Recreation Facilities. As noted above, facilities for snow skiing are available at Brianhead ski resort as well as Cedar Canyon Ski Area (65 acres). Since this region is known for its winter sports facilities, resorts to the north along the Wasatch Range are sure to be utilized for weekend or longer trips. Some day trips may include the Mount Holly Ski area just east of Beaver. However, this area is a bit far to travel considering the close proximity of Brianhead. Snowmobile and cross country trails are maintained in the National Forest Lands as noted above.

Water Related Recreational Facilities. Activities such as powerboating, waterskiing and sailing that require a good deal more area than other water-related activities, are only available in lakes or reservoirs. Those that are within easy access of Beryl include Enterprise, Minersville, Gunlock and Navajo Lake. Most of these areas provide swimming opportunities as well. There are no developed river rafting, canoeing or kayaking facilities in this region, however, there are a number of mountain creeks and the Santa Clara, Beaver and Sevier Rivers may be used for these activities.

ORV and Other Forms of Dispersed Recreation. There are two forms of off-road vehicle (ORV) activity sites: intensive and dispersed. Examples of sites intensive ORV use would be dunebuggying, hill climbing and motorcross racing. As mentioned above, the sand dunes of the Coral Park State Reserve is an area of dunebuggy activity as is the Sand Mountain area just east of St. George. Although these areas are beyond the limits of the sphere of influence, they are the closest dune areas in the region (UORA, 1976).

Site intensive motorcycle hill-climbing is not an activity that has required management planning in the past in this area. In general this type of recreational use can be expected on some of the public lands in the near vicinity of population

Table 3.4.1.3-9. Recreation sites on Dixie National Forest land in the vicinity of Beryl.

NAME OF SITE	ACTIVITY	UNITS	± MILES FROM BERYL
Pine Park	Camping Hunting	11 camps —	45
Enterprise Reservoir	Camping Fishing Hunting Boating	21 camps — — 1 ramp	40
Pine Valley	Camping Fishing	60 camps —	50
Oak Grove	Camping Hunting	9 camps —	45
Vermillion	Camping Fishing Hunting	10 camps — —	25-30
Panguitch Lake	Camping Fishing Hunting Boating	63 camps — — 2 ramps	45
Duck Creek	Camping Fishing Hunting	95 camps — —	30
Navajo Lake	Camping Fishing Hunting Swimming & Boating	32 camps — — 1 ramp	50
Red Canyon	Camping Hunting	30 camps —	55

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Utah Travel Council.

centers (estimated at a 3 - 10 mile radius) such as Cedar City, Enterprise, Parowan and St. George.

One motorcross course has been run in the past. The future of this event is unknown, however, with an added population base, interest may grow and support such an event. Much of the flat land around the proposed base is privately owned and thus it is expected that little motorcycle activity will occur in this area due to conflicts with private concerns.

OVR trails or four-wheel drive trails are abundant throughout the region. At present, all of the trails on BLM lands are open and a significant portion of the Forest Service and State lands have open trails. Iron County has the greatest amount of ORV trails in this region (1,696 miles). This is a result of the significant BLM landholdings in this county. Washington County has the lowest mileage (656 mi), as a result of Zion National Park and Dixie National Forest lands as the use of ORV's is restricted in these areas.

Another dispersed recreation pursuit is hiking. Hiking is generally associated with diversified county and mountain areas. In Washington County there are over 390 mi of hiking trails as compared to 148 mi in Iron County. National Forest and National Park lands are preferred for their type of activity as compared to BLM lands. Another factor is the fact that a good portion of Iron County is the Escalante Desert, a region of open terrain good for driving but low in water resources and thus not attractive for hiking.

Quality of Life (3.4.1.3.7)

In general, people in Iron County are satisfied with their communities, with such advantages as access to out-of-doors; a good place to raise a family; friendliness of people; and absence of a polluted environment. Disadvantages include the lack of jobs for young people, lack of good shopping centers, lack of cultural refinement, and lack of opportunities for earning an adequate income.

In 1976, citizen committees were organized to prioritize community problems (Five County Development Plan). Ranked as the number one problem area was unemployment/underemployment, followed by inadequate income, family conflicts, crime/delinquency, child abuse and neglect, and drug/alcohol abuse.

Health services are low to adequate, with 0.7 physicians/1,000 population; 1.0 dentists/1,000; 2.8 registered nurses/1,000 population; and 3.6 hospital beds/1,000 population. These levels compare to the Utah state mean levels of 1.4, 0.7, 4.8, and 3.1, respectively. Public safety indicators show 1.8 law enforcement personnel/1,000 in Iron County, compared to 2.3 officers/1,000 population for the Utah state means. The evaluation of social disorganization indicators--divorce, suicide, and alcoholism rates--describe a relatively stable community. The numbers of reported violent crimes and crimes against property were about average with other Utah study area counties.

Traffic and Transportation (3.4.1.3.8)

The proposed site is in an undeveloped area in southern Utah. Primary access is via a 12-mi-long paved road, which runs north from the intersection of State

Highway 56. The area is also adjacent to an unpaved road connecting Milford, 50 mi northeast of Beryl, with Modena, 15 mi to the southwest. A map of the road network in the vicinity is shown in Figure 3.4.1.3-1; also shown are 1978 traffic volumes for the major routes.

The road between Beryl and Beryl Junction is a low-volume county road. Existing traffic volumes are unknown. State Highway 56 is a good quality two-lane road with an ADT of 460 vehicles near Beryl Junction. Cedar City is 43 mi to the east along this route. State Highway 18 is a good quality two-lane road, which passes through St. George 60 mi to the south.

There are two small rural towns near Beryl Junction, Newcastle and Enterprise, which lie on State Highway 56 and 18, respectively. There are a number of small communities west of the proposed site along State Highway 56. These include Pioche, Panaca, and Caliente.

The proposed site is adjacent to the Union Pacific railroad line which connects Salt Lake City, Utah, and Las Vegas, Nevada. Limited commercial airline service is available at Cedar City.

Energy (3.4.1.3.9)

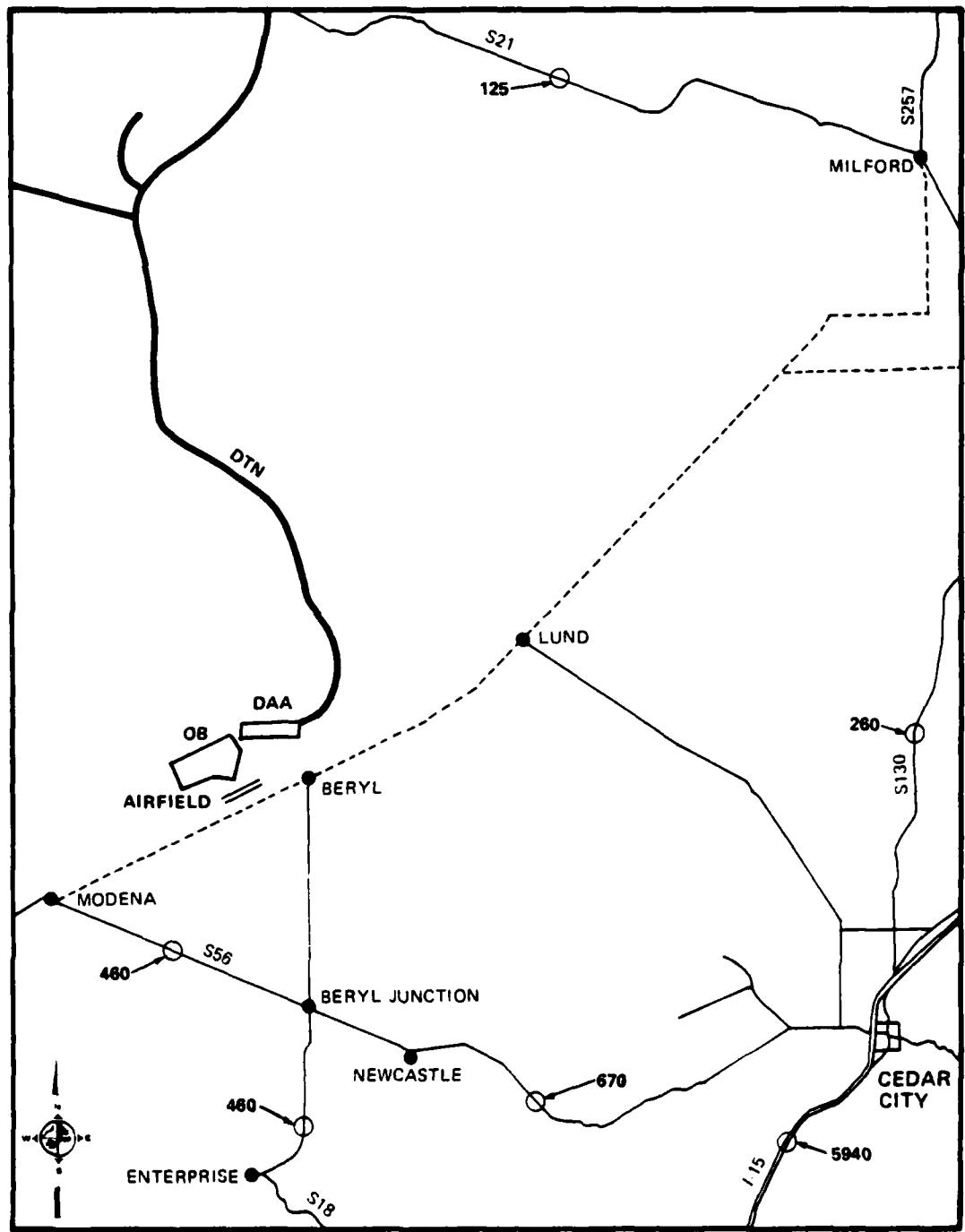
Beryl has no natural gas service. Service could be extended into the area by Mountain Fuel Supply (MFS) in Salt Lake City, but there are presently no plans for such expansion. Pacific Gas Transmission (PGT), a subsidiary of Pacific Gas and Electric in San Francisco, has proposed to build a 30-in. high-pressure gas transmission line from Kemmerer, Wyoming, and Bonanza, Utah, joining east of Provo, Utah, near Strawberry Reservoir, continuing along Interstate 15 through Cedar City. This line will have sufficient capacity to transport natural gas to Beryl, which is approximately 20 mi west of the proposed pipeline route.

Home energy requirements in Beryl are supplied by bottled gas, fuel, oil, and electricity. The fuels are trucked from bulk fuel handling terminals in Las Vegas and Salt Lake City to regional distribution centers in St. George and Cedar City.

Electrical energy is supplied by Dixie-Escalante Rural Electric Association, Inc., which has a peak system demand of approximately 20 MW. The utility purchases its power from the Western Area Power Administration and the Department of Energy. Beryl is served by a 12.5 V rural distribution line.

Land Ownership (3.4.1.3.10)

The proposed operating base is located principally on BLM administered land. The proposed airfield location would be a combination of private, state, and federal lands, and the proposed OBTS located approximately 8 mi north and east, would be exclusively on federal land under the control of the Bureau of Land Management. Land ownership in Iron County is comprised principally of federal lands (58 percent), with state and private shares comprising 6 percent and 35 percent, respectively.



LEGEND 000 - 1978 TRAFFIC VOLUMES: BERYL, UTAH

SCHEMATIC: NOT TO SCALE 2184-A

SOURCE: UTAH DEPARTMENT OF TRANSPORTATION

Figure 3.4.1.3-1. Existing traffic volumes in the vicinity of Beryl.

Land Use (3.4.1.3.11)

Land Use Plans

Beryl, is is within the Southwestern (planning) District. Iron County and all incorporated municipalities have current land use plans with orderly growth policies.

Beryl

The dominant land uses in the area are rural with residential developments distributed on farms. Commercial development in Beryl is in a single location but is subject to pressures for highway strip development.

Cedar City

In 1979, Cedar City occupied 4,698 acres of land of which 2,000 acres had been developed for urban uses. The remaining lands are in agriculture or are vacant. Developed lands are dominated by residential and circulation uses, approximately 23.3 percent. Other land uses in the community are commercial, 3.9 percent; public/semi-public, 4.9 percent; parks and open space, 3.1 percent; and industrial/utility, 2.7 percent.

Zoning

Iron County has a 1961 zoning ordinance and a subdivision ordinance. A large portion of the county is zoned as outlying. Any type of land use may be located anywhere in the zone.

The subdivision ordinance should give adequate protection to the county when new subdivision plots are proposed.

Land Use

Iron County comprises about 2,112,000 acres, of which 974,080 acres (46 percent) is rangeland managed by the BLM. Critical areas of concern within 50-70 mi of Beryl include the Dixie National Forest, Zion National Park, and a State Wildlife Management Area at Indian Peak.

Agriculture

About 150 acres of irrigated cropland are located to the southeast, midway between the OB and Beryl. The area around the proposed OB facilities is used mainly for grazing. The OB site lies in the Pinyon Planning Unit where the Bureau of Land Management permits 14.4 acres per AUM for a total grazing authorization of 87,373 AUMs.

Recreation

The region surrounding the proposed OB contains no fishing or concentrated recreation sites. Most of the land is privately owned and, as such, is not subject to any dispersed recreation activities.

Mining

There are no mining sites in the vicinity. Some oil and gas leases have been filed on nearby public land, and there is one metallic lease on state land.

Native Americans (3.4.1.3.12)

Five bands of Southern Paiutes live in southern Utah, three in the Beryl vicinity and two about 100 mi away.

In 1954, these bands, Indian Peaks, Shivwits, Cedar City, Kanosh, and Koosharem, which make up the Nuwuvi Tribe, were terminated from federal trusteeship and, unable to pay their taxes, lost most of their land. As of April 1980, the bands have been restored to federal trusteeship. Law provides that old reservation lands be restored to the extent possible and that up to 15,000 acres be acquired in addition to 26,880 acres retained by the Shivwits band and 80 acres of original reservation lands retained by the Kanosh.

The site is located at the confluence of three historic Southern Paiute band territories—the Tonoquints, Kumoots, and Indian Peak. Five recorded Southern Paiute historic habitation sites are located on the foothill area north of Modena. There is a high probability of numerous other sites in the area. Site-specific information on the socioeconomic environment of the Indian Peak, Kanosh, Koosharem, Shivwitz, and Cedar City bands of the Utah Southern Paiutes is being collected by a field research team.

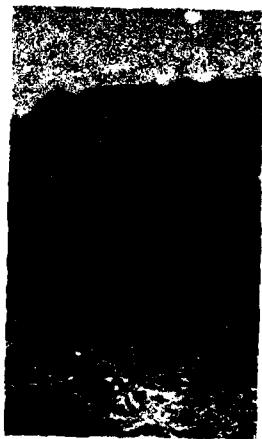
Archaeological and Historical Resources (3.4.1.3.13)

Very little systematic surveying has been conducted in the vicinity of the proposed Beryl OB and little is known of cultural resources. Two limited activity or short-term camps are located to the southwest of Beryl. One of these may be more complex, with buried deposits eroding from dunes. The region to the south and east was occupied prehistorically by Puebloan people and historically by the Southern Paiute. Approximately 31 percent of the area within a 20-mi radius of the proposed Beryl site is predicted to contain potential historical sites.

Paleontological Resources

The site is on alluvial valleyfill in an area that at one time was inundated by Lake Bonneville. Important vertebrate fossils have been found in scattered locations in the Bonneville sediments.

Coyote Spring



COYOTE SPRING VALLEY (3.4.2)

Introduction (3.4.2.1)

The area of analysis (AOA) for the Coyote Spring Valley operating base option includes both Clark and Lincoln counties. The AOA is located in the southern portion of the designated region of influence (Figure 3.4.2.1-1). Las Vegas and North Las Vegas are the major settlements and will receive most emphasis. However, the communities of Caliente, Panaca, and Pioche, in Lincoln County, could also receive project impacts and are included in the AOA.

This section and Chapter 4 detail important environmental characteristics of Coyote Spring Valley and vicinity.

Clark County

Early in the 19th century the groundwater of the meadows of Las Vegas attracted caravans of traders and Mormon colonists. In 1855, Mormons established a settlement on the Las Vegas meadows, occupied and farmed the land, and organized a mission to Christianize the Indians. At the time of the Mormon arrival, Indians were growing wheat. Mormon farmers improved the area's grain crops, processed wild hay and organized cattle ranching. The Mormon settlement proved to be shortlived, 1855-1857, due to internal dissension stemming largely from the possibility of working the lead-silver ore of the area, especially the Potosi lead mine southwest of Las Vegas. Las Vegas continued to be a way point on the Santa Fe trail and later as way station on the Union Pacific Railroad. However, it remained a small town until after World War II.

Lincoln County

In the early 1860s, rich ore deposits began to attract miners to the county. As a result, several towns developed, such as Hiko, Pioche, and El Dorado. Panaca was established by the Mormons as a way station for travelers moving between southern California and Salt Lake City. The county itself was created by the State Legislature in 1867 as the result of the personal efforts of Governor Blasdel. The county was cut from Nye County.

Other Projects

Clark County

Employment growth projections indicate a moderation of growth but continued emphasis on a service-based economy. Table 3.4.2.1-1 presents employment projections by major industry over the period 1980-1994 for Clark County. These forecasts have been separated into Baseline 1 and 2, and project employment by place of residence and not place of work, as in Tables 3.4.2.3-1 and 3.4.2.3-2. In the case of Clark County, many persons working in the county live elsewhere, thereby reducing employment figures. In comparison to the 1977 employment figure of 185,198 presented in Tables 3.4.2.3-1 and 3.4.2.3-2, employment by place of residence for this same year (Table 3.4.2.1-2) equals 161,500 jobs (Nevada Employment Security Department, 1980). Employment by place of residence for 1978 equalled 169,500, and for 1979, this figure increased to 188,700. Forecasts for both

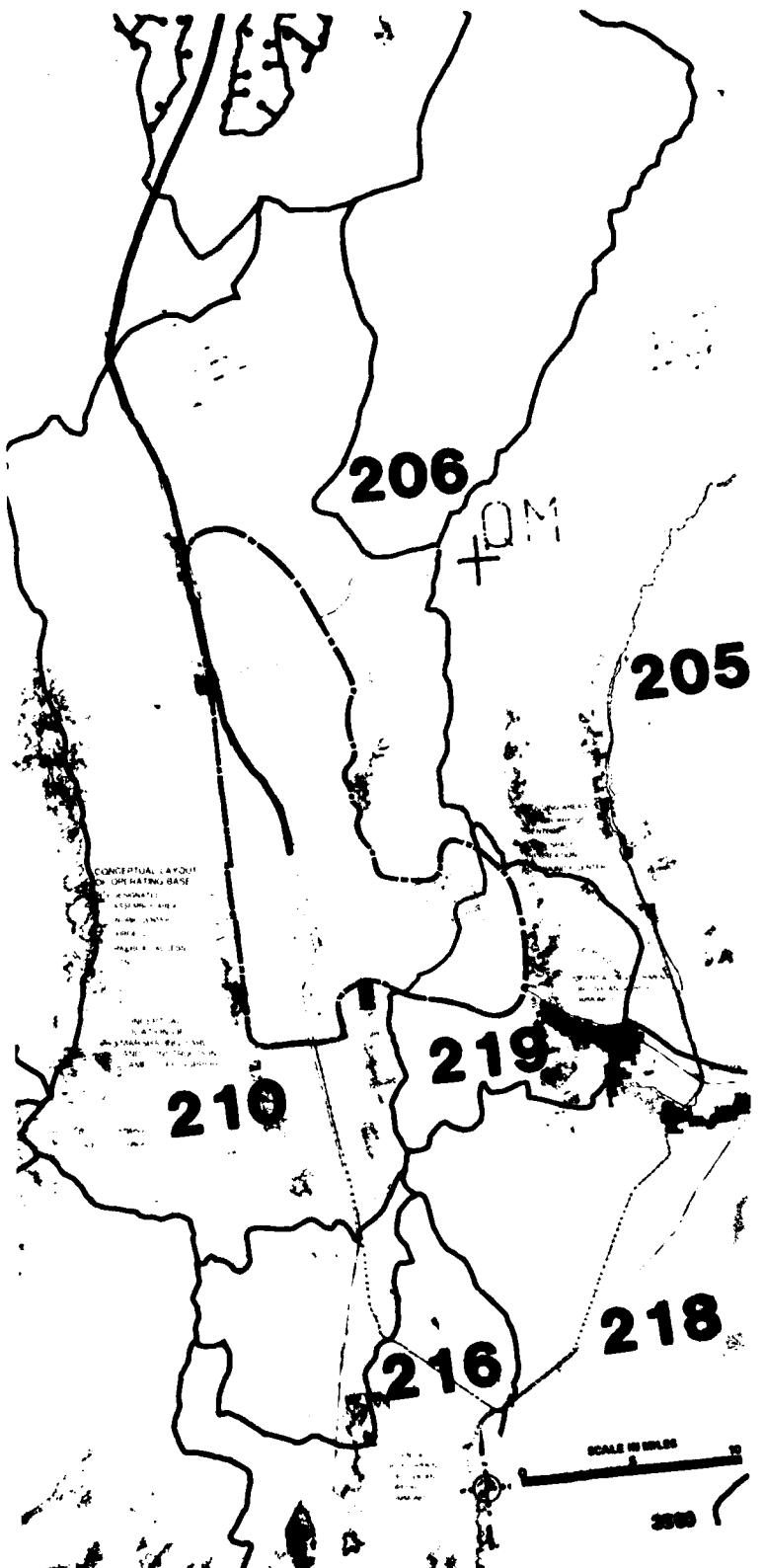


Figure 3.4.2.1-1. Area of Analysis (AOA) for the Coyote Spring vicinity.

Table 3.4.2.1-1. Projected employment by major industrial sector, Clark County, 1980-1981.

BASELINE 1		1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Agriculture	1,028	1,036	1,054	1,053	1,064	1,074	1,081	1,087	1,094	1,100	1,107	1,111	1,120	1,126	1,132	
Mining	252	254	254	266	274	282	288	294	301	308	315	322	330	337	346	
Contract Construction	15,168	15,580	16,216	16,900	17,612	18,393	19,419	19,412	19,970	20,522	21,081	21,658	22,246	22,832	23,430	
Manufacturing	6,627	6,806	7,085	7,136	7,605	7,888	8,078	8,263	8,457	8,652	8,856	9,053	9,259	9,461	9,666	
Transport, Commun., Util.	13,104	13,622	14,163	14,746	15,369	16,025	16,455	16,898	17,320	17,767	18,224	18,686	19,153	19,625	20,103	
Wholesale & Retail Trade	43,717	45,359	47,048	48,874	50,834	52,891	54,252	55,590	56,931	58,402	59,844	61,283	62,765	64,231	65,705	
Finance, Ins., Real Estate Services	8,478	8,857	9,256	9,687	10,155	10,645	10,948	11,240	11,548	11,859	12,179	12,496	12,825	13,154	13,480	
Government	90,834	94,240	97,818	101,607	105,628	109,833	112,914	116,022	119,222	122,504	125,876	129,257	135,172	136,265	139,868	
Non-Farm Proprietors	12,112	12,603	13,104	13,646	14,233	14,850	15,244	15,621	16,021	16,424	16,831	17,219	17,653	18,062	18,473	
TOTAL	219,514	227,291	235,725	244,698	254,278	264,306	271,173	277,950	284,999	292,134	299,419	306,669	316,530	321,557	329,084	
BASELINE 2																
Agriculture	1,028	1,036	1,044	1,054	1,064	1,076	1,083	1,098	1,101	1,108	1,115	1,121	1,128	1,134		
Mining	252	254	259	266	274	282	288	294	301	308	315	322	330	338	346	
Contract Construction	15,169	15,581	16,219	16,905	17,610	18,398	19,416	19,450	19,987	20,535	21,094	21,670	22,253	22,846	23,444	
Manufacturing	6,630	6,809	7,093	7,350	7,625	7,925	8,121	8,305	8,497	8,684	8,885	9,083	9,288	9,483	9,687	
Transport, Commun., Util.	13,108	13,628	14,179	14,776	15,412	16,093	16,532	16,970	17,367	17,824	18,271	18,736	19,205	19,673	20,147	
Wholesale & Retail Trade	43,725	45,368	47,072	48,915	50,896	53,017	54,400	55,746	57,132	58,518	59,941	61,387	62,867	64,337	65,815	
Finance, Inc., Real Estate Services	8,481	8,861	9,263	9,700	10,175	10,684	10,991	11,285	11,580	11,894	12,208	12,555	12,885	13,186	13,514	
Government	90,844	94,251	97,849	101,658	105,710	109,075	113,077	116,185	119,372	122,626	125,982	129,365	132,847	136,180	139,588	
Non-Farm Proprietors	12,135	12,607	13,113	13,661	14,255	14,880	15,291	15,667	16,066	16,460	16,864	17,271	17,686	18,096	18,507	
TOTAL	219,551	227,338	235,866	244,866	254,864	264,864	271,864	277,864	284,864	292,864	299,864	306,864	316,864	321,864	329,864	

SOURCE: Bureau of Business and Economic Research, University of Utah, October 1980.

Table 3.4.2.1-2. Employment (by place of residence)
1977-1979.

STATE/COUNTY	1977	1978	1979
Utah			
Beaver	1,740	1,910	1,960
Iron	6,360	6,860	7,144
Juab	1,930	2,000	2,086
Millard	3,030	3,220	3,359
Salt Lake/Utah	308,580	332,720	352,959
Washington	6,950	7,820	8,283
Nevada			
Clark	161,500	169,500	184,700
Eureka	530	520	560
Lincoln	1,300	1,490	1,330
Nye	1,860	1,880	1,890
White Pine	3,430	2,820	2,780

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Sources: Utah Dept. of Employment Security:
Nevada Employment Security Dept.

baselines project a further increase in employment by place of residence to 219,514 jobs in 1980; a level much too high to be supported by historic data. The first set of projections are essentially an extrapolation of 1967 - 1978 growth trends in the county. Baseline 2 includes Baseline 1 plus other projects considered likely by the University of Utah's Bureau of Business and Economic Research. In the case of Clark County, these two scenarios are virtually the same, differing only by about 500 jobs by the year 1994. Baseline employment growth is forecast to grow at an average annual rate of 2.7 percent over the forecast period, yielding a net increase of about 110,000 jobs. Continuing historical precedent, services are forecast to lead growth, increasing to about 43 percent of total county employment by 1994 (Figures 3.4.2.1-2 through 3.4.2.1-4).

Lincoln County

Employment growth projections indicate a substantial reduction of employment growth over the 1980-1994 forecast period. The largest employment sector will become mining which, in 1993, is forecast to comprise 23 percent of the total Lincoln County employment.

Table 3.4.2.1-3 presents employment projections by major industry, prepared by the University of Utah's Bureau of Business and Economic Research (BBER). Although the BBER separated forecasts into Baseline 1 and Baseline 2, only the first set are presented here. The two projections differ for some counties due to the inclusion of employment growth in addition to continuation of 1967-1978 growth trends. In Lincoln County, however, Baseline 1 growth has been assumed to equal that for Baseline 2. Over the forecast period, employment is forecast to increase at an average annual rate of 1.8 percent, increasing to 1,692 persons by 1994 (Figures 3.4.2.1-5 through 3.4.2.1-7). Emphasis will continue to remain in mining and government. However, combined employment in services and trade is projected to reach 530 persons, or 31 percent of the county's total employment by 1994. Other sectors, traditionally important in well-balanced economies, such as manufacturing and finance, insurance, and real estate, are forecast to remain very important to Lincoln County employment.

Natural Environment 3.4.2.2

Groundwater (3.4.2.2.1)

The main body of groundwater occurring in the valleyfill is probably at depths of 270 ft or more. However, around Coyote Spring, some "semi-perched" groundwater exists at shallower depths. Beneath the valleyfill groundwater system is the regional carbonate aquifer.

Development of groundwater in the area is concentrated in the Muddy River Springs area in the southeastern part of Coyote Spring Valley. It includes about 12 wells for irrigation and several others for domestic and stock use. The annual withdrawal by wells is estimated to be in the range of 2,000 to 3,000 acre-ft.

Surface Water (3.4.2.2.2)

The major source of surface runoff is rainfall, generally greatest in the mountains (snow commonly occurs during the winter only in the high mountains).

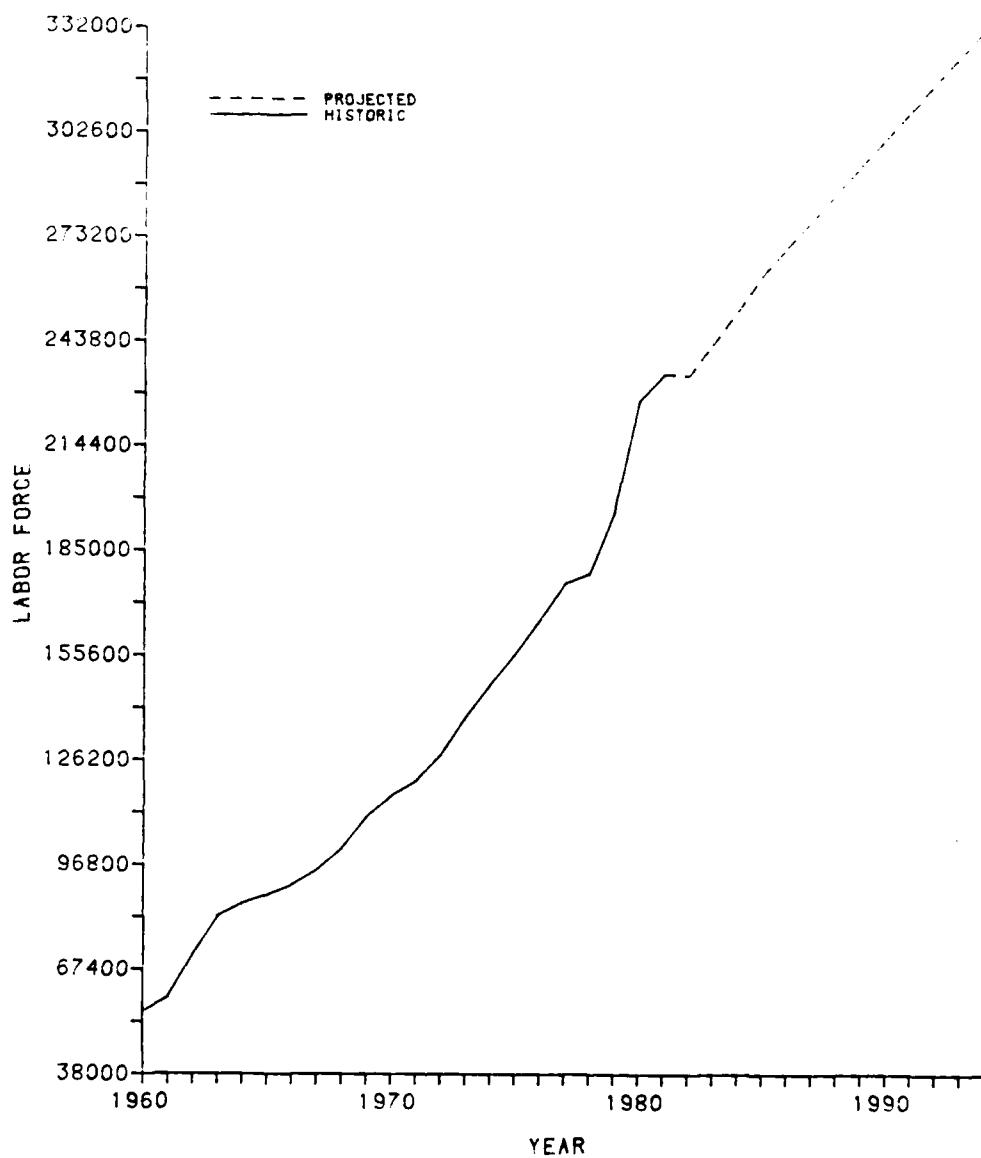


Figure 3.4.2.1-2. Historic and projected baseline labor force in Clark County.

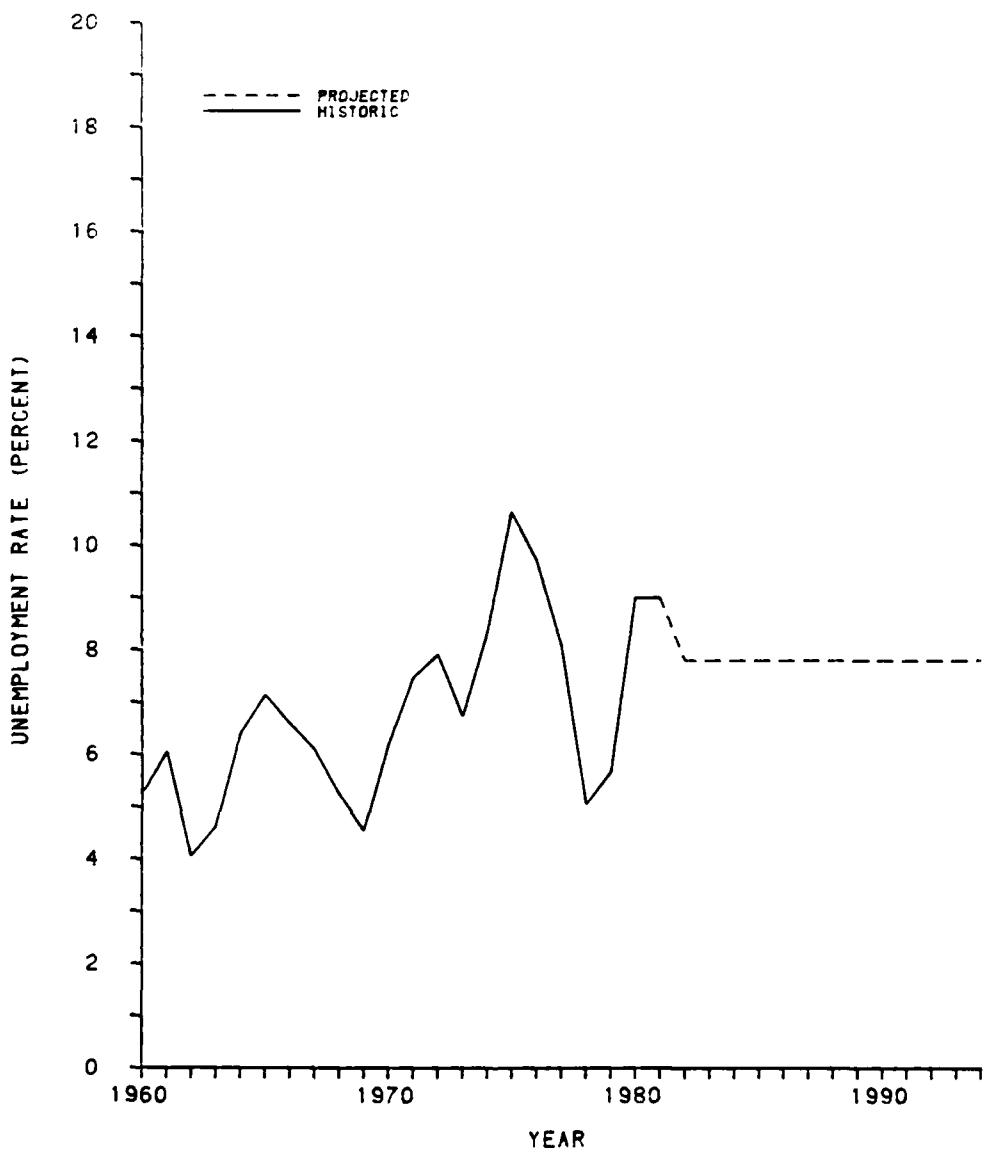


Figure 3.4.2.1-3. Historic and projected baseline rate of unemployment in Clark County.

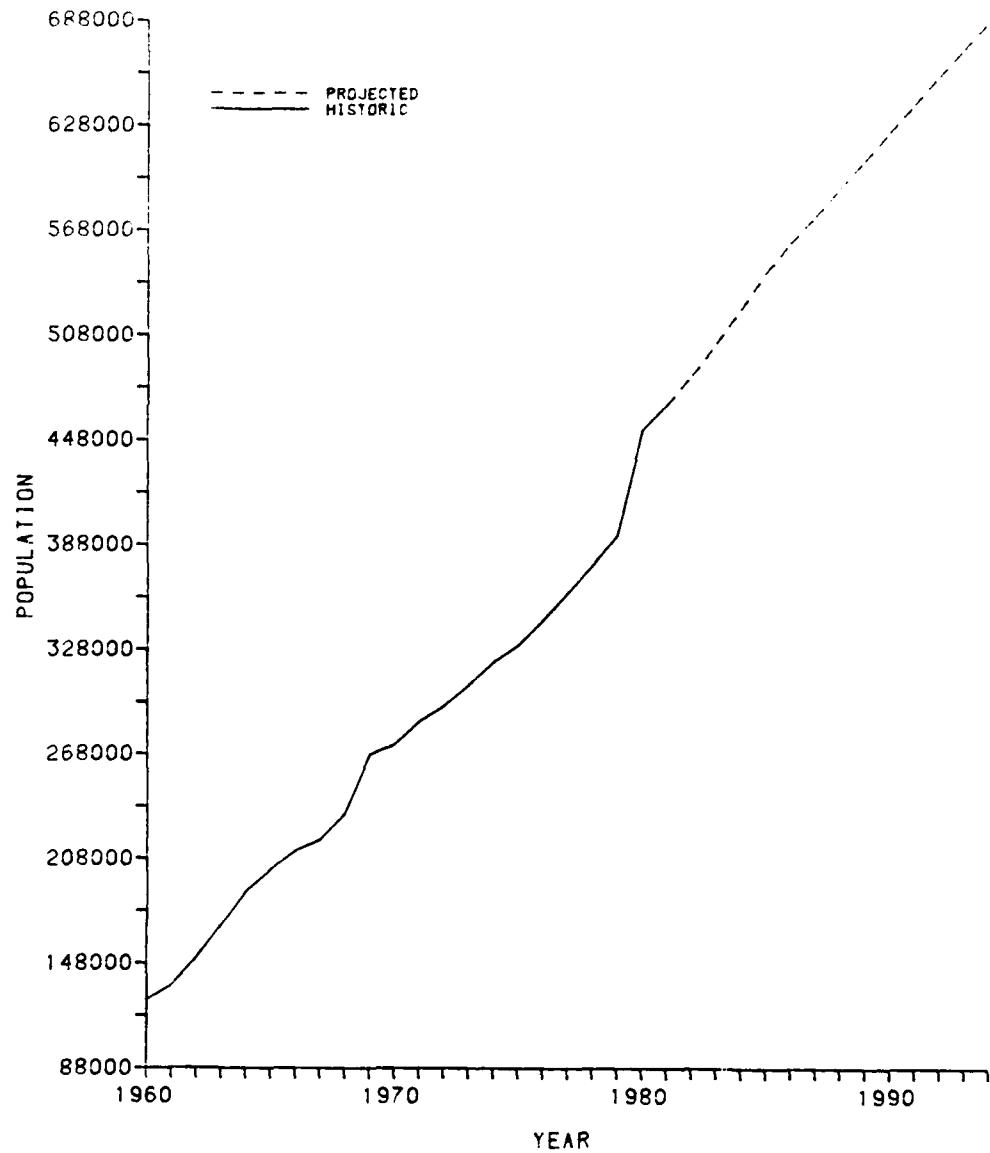


Figure 3.4.2.1-4. Historic and projected baseline population in Clark County.

Table 3.4.2.1-3. Employment projections by major industrial sector, Lincoln County, 1980-1994.

BASELINE 1	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Agriculture	149	149	149	149	150	150	152	152	152	154	154	154	154	154	154
Mining	293	289	296	303	311	320	327	334	342	349	357	367	376	386	395
Contract Construction	20	20	21	21	23	24	25	25	25	26	26	28	28	28	29
Manufacturing	12	12	13	14	14	15	15	15	15	16	16	17	17	17	18
Transport, Commun., util.	56	57	60	61	64	66	69	70	71	72	75	76	78	80	82
Wholesale & Retail Trade	219	225	233	238	246	255	260	263	269	275	281	286	293	298	304
Finance, Ins., Real Estate	15	16	16	17	18	18	19	19	19	20	20	20	21	21	22
Services	152	157	162	168	175	181	186	190	195	200	206	211	216	222	226
Government	113	117	124	129	135	143	146	150	154	161	164	167	170	173	175
Non-Farm Proprietors	65	67	70	73	75	77	78	79	81	83	85	87	87	88	88
TOTAL	1,292	1,310	1,340	1,374	1,409	1,447	1,472	1,498	1,525	1,550	1,578	1,606	1,633	1,662	1,692

Source: Bureau of Business and Economic Research, University of Utah, October 1980.

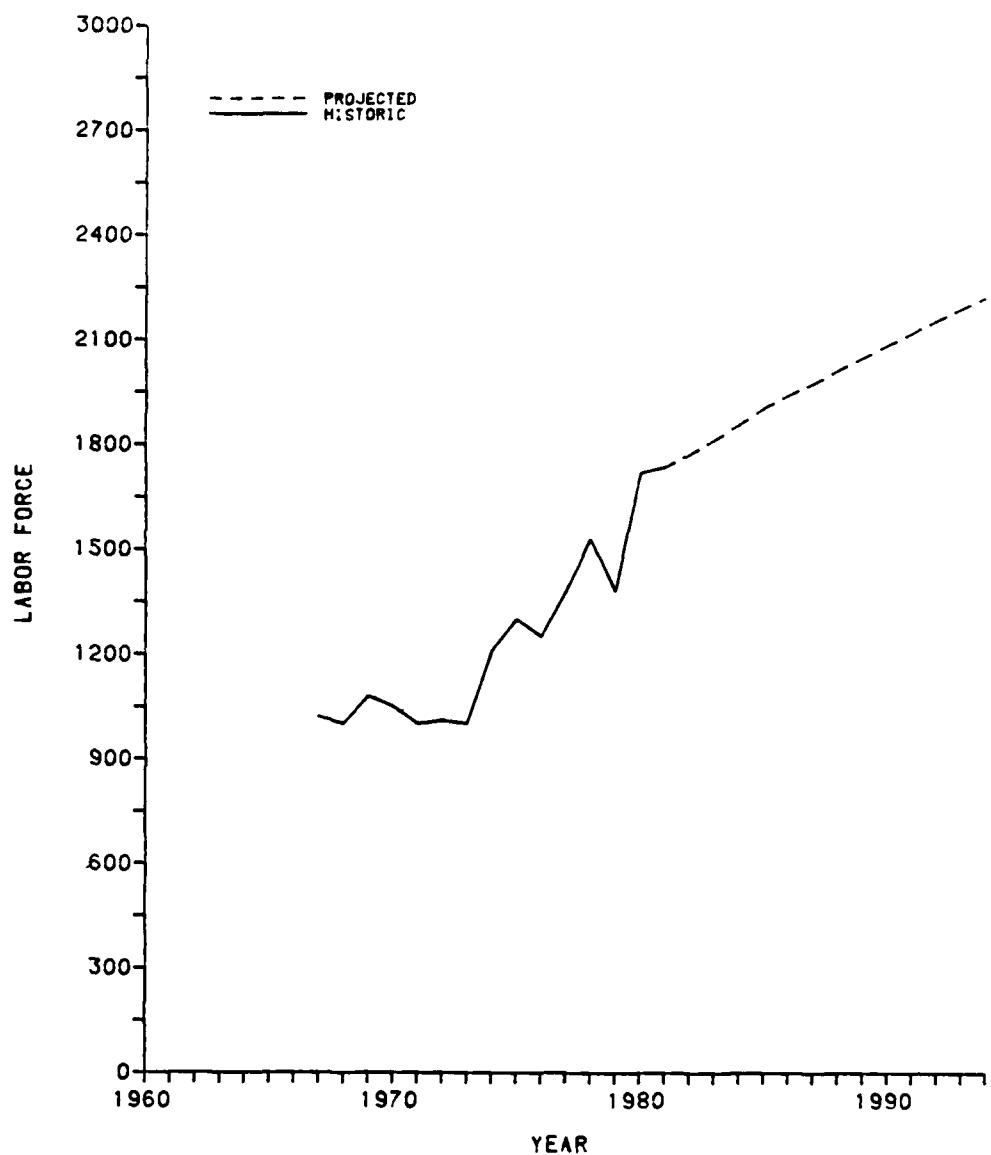


Figure 3.4.2.1-5. Historic and projected baseline labor force in Lincoln County.

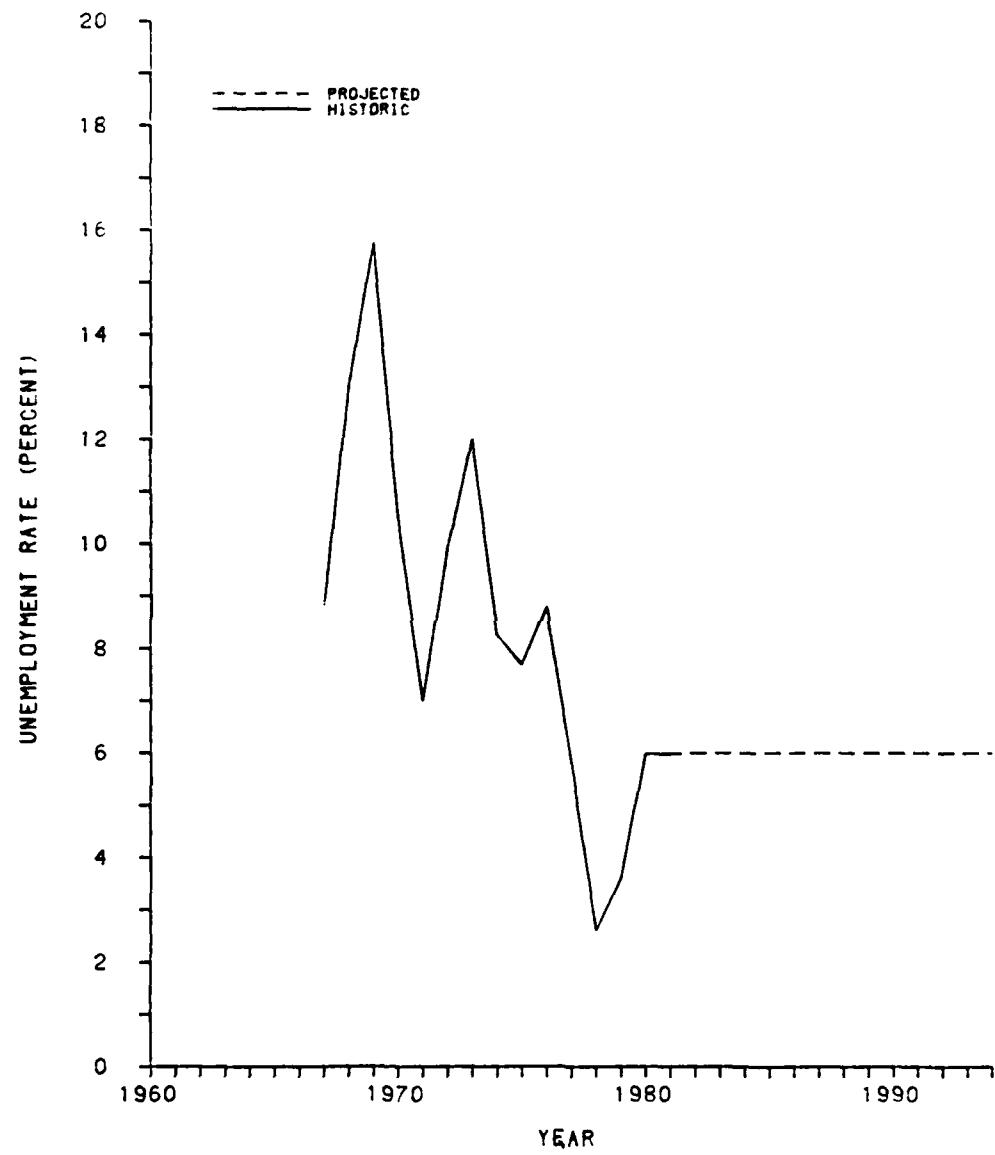


Figure 3.4.2.1-6. Historic and projected baseline rate of unemployment in Lincoln County.

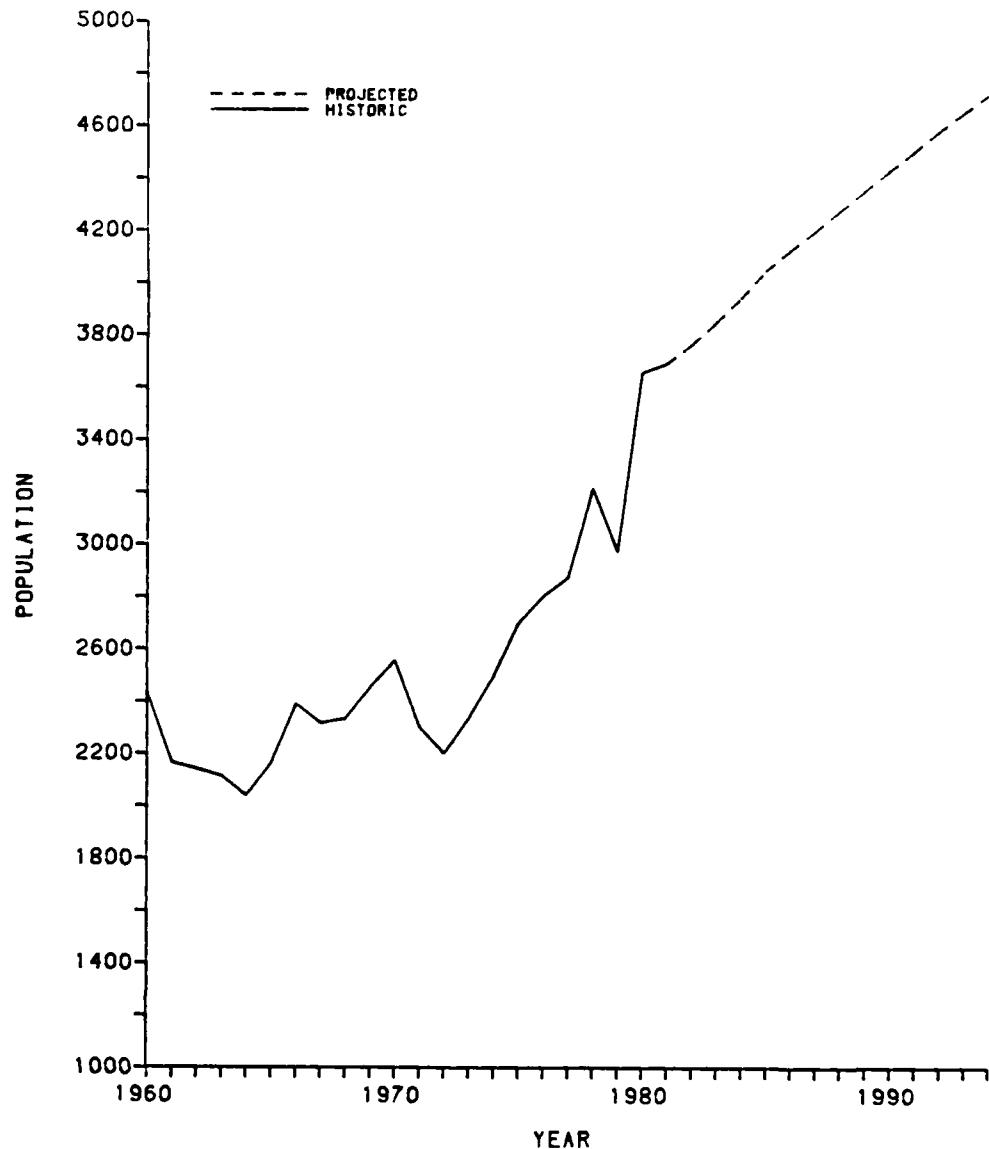


Figure 3.4.2.1-7. Historic and projected baseline population in Lincoln county.

Coyote Spring Valley

Stream flow in most of the White River, which flows through Coyote Spring Valley only occurs for short intervals after high intensity storms. The combined yield of springs is small and is used mostly for watering stock.

Air Quality (3.4.2.2.3)

Dispersion is primarily a function of local winds, mixing heights, and topography. A summary of some climatological parameters relevant to air quality appear in Table 3.4.1.2-1.

Particulate emissions for the Coyote Spring area are 115,587 tons per year from all sources, including windblown fugitive dust (Table 3.4.1.2-1). The baseline gaseous emissions levels are also shown in Table 3.4.1.2-2.

Biological Resources (3.4.2.2.4)

Vegetation and Soils

The soils of Coyote Spring Valley are those found primarily on terraces and alluvial fans. In general, the soils are shallow to moderately deep and on slopes of 2 to 15 percent. In the valley, bottom and floodplains of Coyote Spring Valley are moderately deep to very deep loamy or clayey soils with slopes ranging from 0 to 8 percent.

Figure 3.4.2.2-1 shows major vegetation types in the area. They are creosote bush scrub, Joshua Tree woodland, desert marsh and spring vegetation, wash and arroyo vegetation, and above 6,000 ft, pinyon-juniper woodland.

The vegetation of Coyote Spring Valley is dominated by typic creosote bush scrub (Mojave desert scrub), consisting of shrubs 2 to 10 ft tall, widely spaced. The dominant species are bursage (Ambrosia dumosa), creosote bush (Larrea divaricata), Nevada ephedra (Ephedra nevadensis), Mojave yucca (Yucca schidigera), and spiny menodora (Menodora spinescens). Creosote brush scrub occurs over the entire valley floor and up to 4,000 ft elevation. Areas with Joshua trees (Yucca brevifolia) with an understory of creosote bush are also found in Coyote Spring Valley.

Near where Kane Springs wash joins the main drainage in Coyote Springs, in the center of the valley, there is an area of palecolored lakebottom sedimentary deposits, with marsh vegetation characteristic of periodically moist alkaline soils. The following species predominate: lens-scale (Atriplex lentiformis), shadscale (Atriplex confertifolia), mesquite, (Prosopis glandulosa), and tamarisk (Tamarix spp.). Understory plants include saltgrass (Distichlis spicata), sand dropseed (Sporobolus cryptandrus), and seep-weed (Suaeda torreyana).

Coyote Spring Valley also contains numerous washes and arroyos. They contain vegetation dominated by desert willow (Chilopsis linearis), punctate rabbit-brush (Chrysothamnus paniculatus), desert encelia (Encelia virginensis), and bursage (Ambrosia dumosa). The main north/south drainage in the valley crosses the proposed operating base site and contains this vegetation. Scattered pinyon-juniper woodland, dominated by Utah juniper (Juniperus osteosperma) and single-leaved pinyon (Pinus monophylla), occurs on the mountain slopes above 6,000 ft.

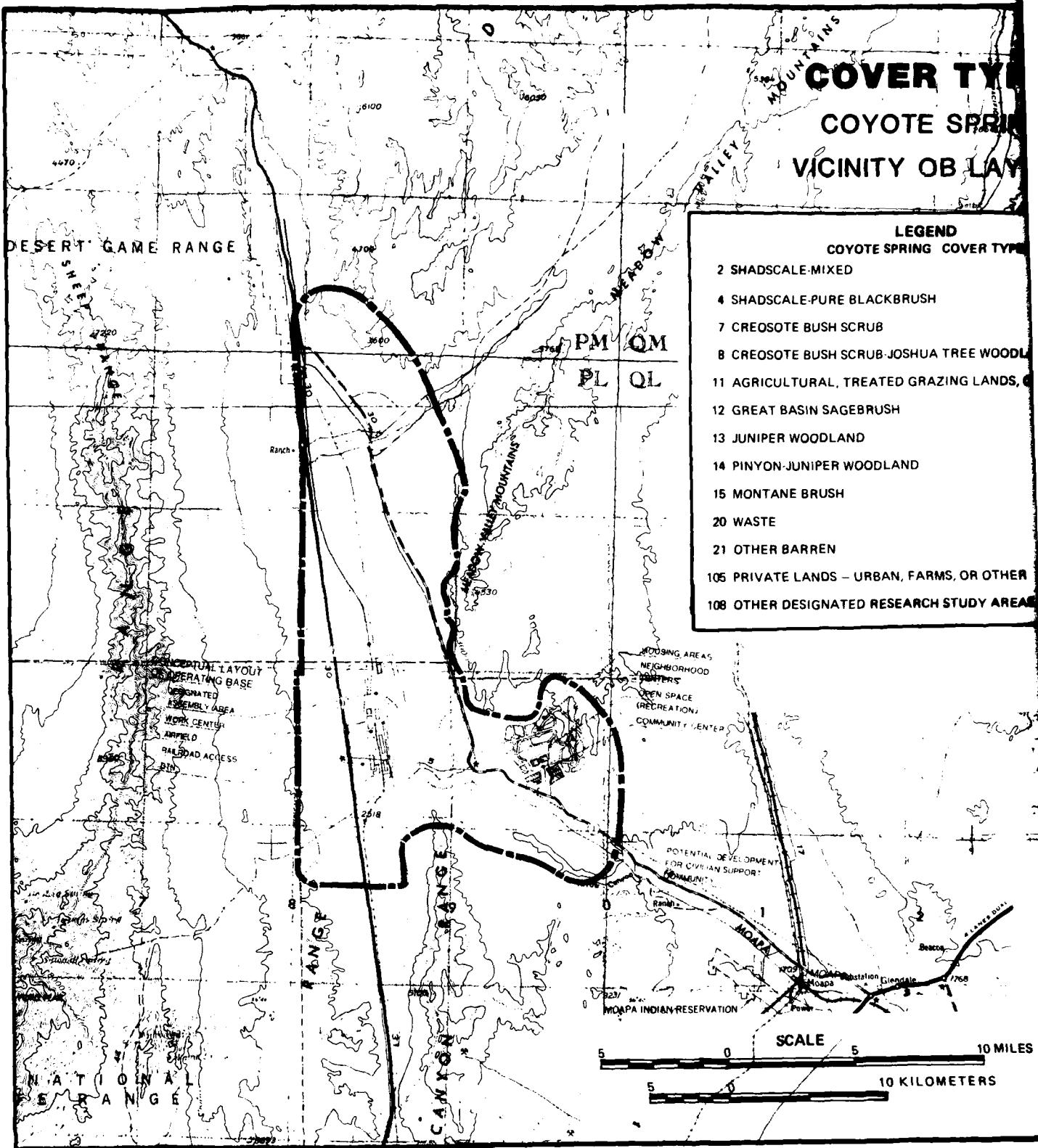


Figure 3.4.2.2-1 Vegetation cover types in the vicinity of

3-402

COVER TYPES
COYOTE SPRING
VICINITY OB LAYOUT

LEGEND
COYOTE SPRING COVER TYPES

- 2 SHADSCALE-MIXED
- 4 SHADSCALE-PURE BLACKBRUSH
- 7 CREOSOTE BUSH SCRUB
- 8 CREOSOTE BUSH SCRUB-JOSHUA TREE WOODLAND
- 11 AGRICULTURAL, TREATED GRAZING LANDS, OR OTHER GRASSLANDS
- 12 GREAT BASIN SAGEBRUSH
- 13 JUNIPER WOODLAND
- 14 PINYON-JUNIPER WOODLAND
- 15 MONTANE BRUSH
- 20 WASTE
- 21 OTHER BARREN
- 105 PRIVATE LANDS - URBAN, FARMS, OR OTHER
- 108 OTHER DESIGNATED RESEARCH STUDY AREAS

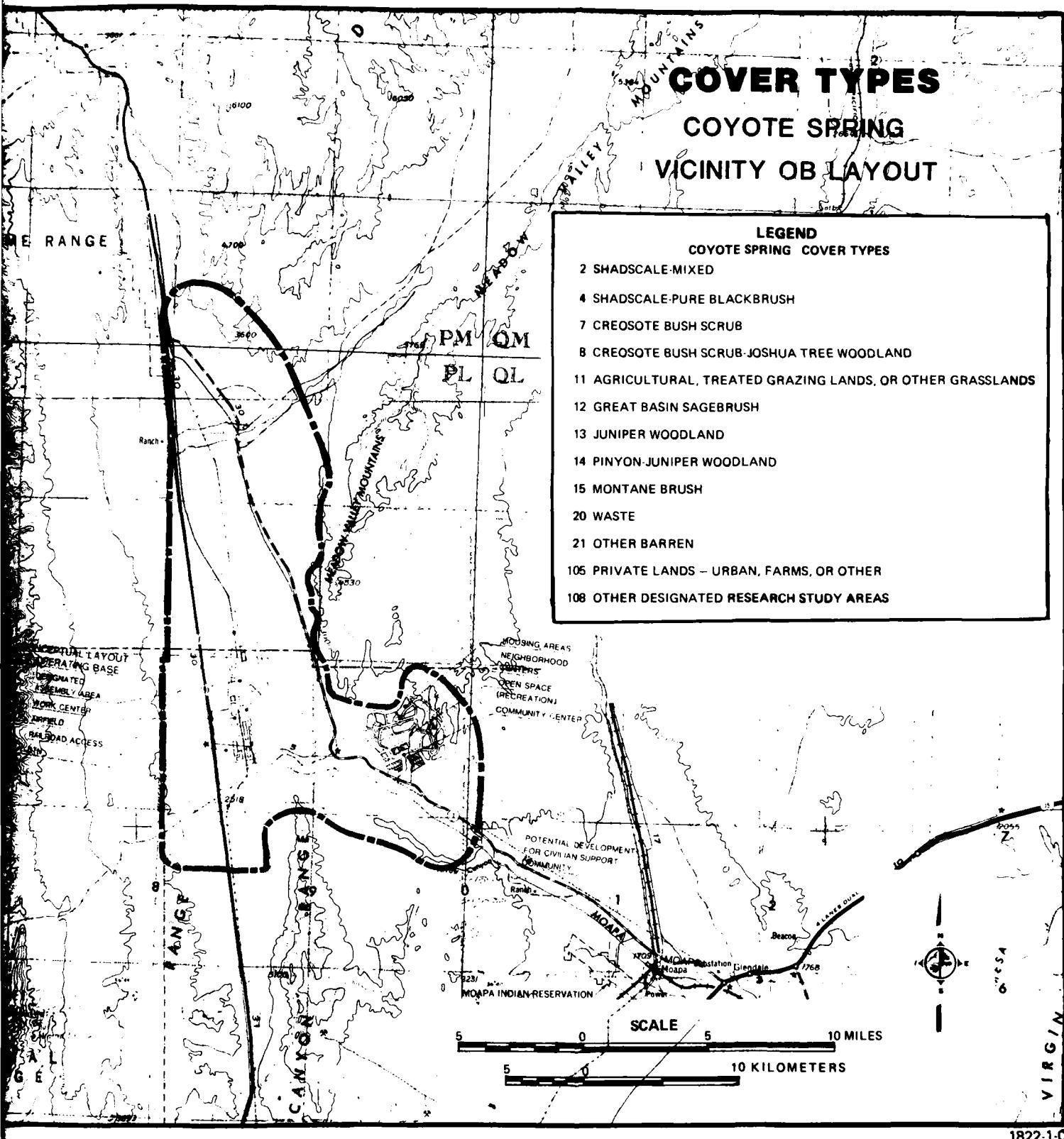


Figure 3.4.2.2-1 Vegetation cover types in the vicinity of Coyote Spring

3-402

2

Coyote Spring Valley

Adjacent Kane Springs Valley is transitional between the Mojave Desert (hot desert) and Great Basin (cold desert) floristic provinces, with greater affinity to the Mojave Desert in vegetation characteristics. The watershed is dry and lacks significant wetland habitats. The topography is dominated by branches of Kane Springs Wash that flow south through the valley, and eventually enter Coyote Spring Valley. The following vegetation types occur in Kane Springs Valley: Mojave desert scrub, desert wash and arroyo vegetation, shadscale scrub, and Great Basin sagebrush. Above 4,500 ft, there are areas of pinyon-juniper woodland and montane brush.

Wildlife

Bighorn sheep occur in all the mountains surrounding this potential OB site, with migration routes located along Highway 93 to the north and south, and one between the Arrow Canyon Mountains and the Meadow Valley Mountains, directly where the OB would be located. Mule deer occur in the Delamar Mountains, the Sheep Range, and the northern part of the Meadow Valley Mountains. Gambel's quail occur throughout this area in the lowlands and waterfowl occur in large numbers in Pahranagat Valley to the north. The chuckwalla may reach its northernmost range limits in this watershed and adjacent Kane Springs watershed.

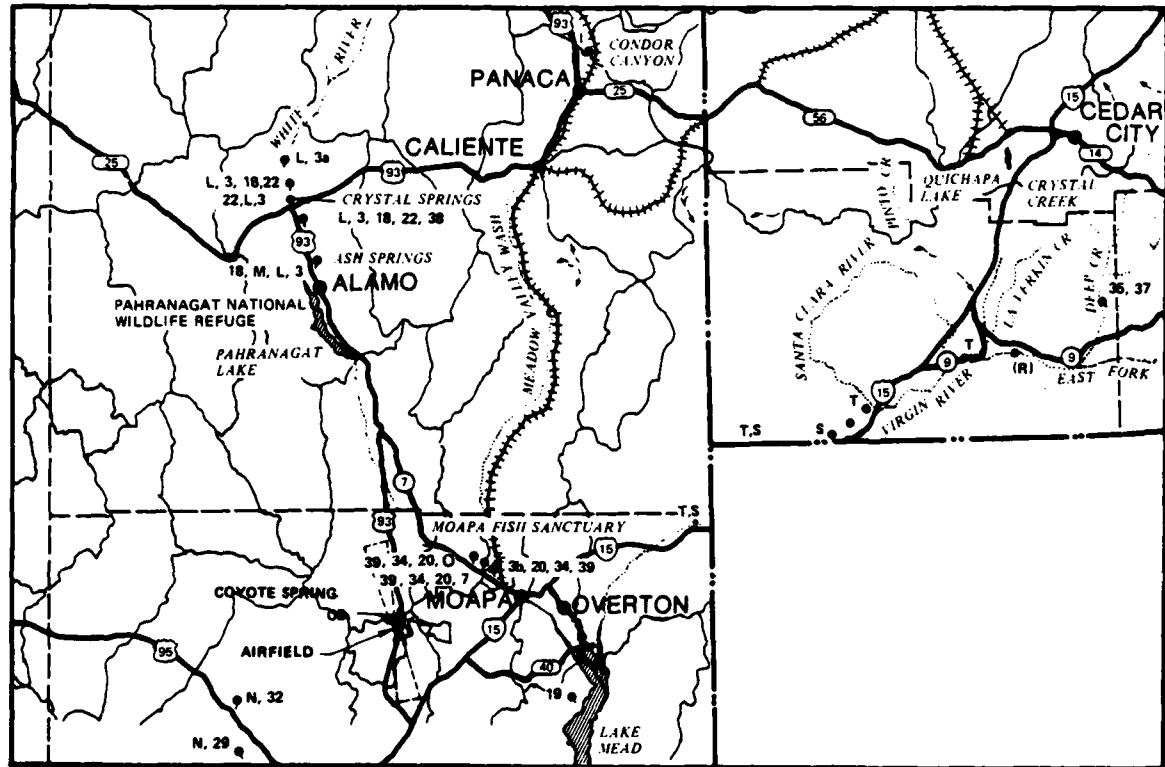
Game Fish

Recreational fishing opportunities are available to the north, east, and south of the potential OB location in Coyote Spring Valley. Upper Pahranagat Reservoir, located 50-60 mi north of the potential OB location, contains a warm-water fishery for largemouth bass, striped bass, green sunfish, and rainbow trout. Some trout (cutthroat and rainbow) are also in mountain streams of Western Meadow Valley Wash (20 mi south of Pioche).

Protected Species

The state protected desert tortoise occurs in this area, mostly on the slopes and washes, but it can be found in any lowland habitat type. The proposed OB site contains some of the greatest concentrations of desert tortoises in Coyote Spring Wash. Bald eagles (federally protected) winter a short distance north in the Pahranagat Valley at the Pahranagat National Wildlife Refuge and Key Pitman Wildlife Management Area. The state protected gila monster may occur in this valley.

Of all the potential OB sites, the Coyote Spring siting area lies nearest to critically sensitive aquatic habitats. Within 1-2 mi downslope from the suitable envelope boundary this potential OB site is the Moapa Fish Sanctuary, containing three protected fish and three recommended protected invertebrates (Figure 3.4.2.2-2). The Moapa dace is federally protected as endangered, and the Moapa White River Spring fish is state protected as threatened. In addition, the Moapa speckled dace and three invertebrates (the Moapa Valley turban, Moapa tryonia, and Moapa creeping water bug), which are recommended for protection, also inhabit the sanctuary. The Pahranagat Valley, just north of this siting area, contains habitat for several protected aquatic species, including the Pahranagat roundtail chub (federally protected as endangered).



LEGEND

PROTECTED FISH SPECIES FOR NEVADA AND UTAH

- 1 BIG SPRING SPINEDACE
- L WHITE RIVER SPRINGFISH
- M PAHRANAGAT ROUNDTAIL CHUB*
- N PAHRUMPS KILLIFISH*
- O MOAPA DACE*
- S VIRGIN RIVER ROUNDTAIL CHUB
- T WOUNDFIN.

RECOMMENDED PROTECTED FISH SPECIES FOR NEVADA

- 3 WHITE RIVER SPRINGFISH
- 3a HIKO WHITE RIVER SPRINGFISH
- 3b MOAPA WHITE RIVER SPRINGFISH
- 7 MOAPA SPECKLED DACE
- (R) VIRGIN SPINEDACE

RECOMMENDED PROTECTED INVERTEBRATES MOLLUSKS

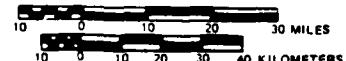
- 20 MOAPA VALLEY TURBAN
- 22 PAHRANAGAT VALLEY TURBAN
- 29 RED ROCK FONTICELLA
- 32 CORN CREEK SNAIL
- 34 MOAPA TRYONIA
- 35 ZION CANYON PHYSA

INSECTS

- DIPTERANS
- 37 VIRGIN RIVER NET WINGED MIDGE
- HEMIPTERANS
- 38 ASH SPRINGS CREEPING WATER BUG
- 39 MOAPA CREEPING WATER BUG

* FEDERALLY PROTECTED

LEGEND



1870-8-1

Figure 3.4.2.2-2. Location of federal, state, and recommended aquatic species near Coyote Spring.

One population of the Steno sandwort (Arenaria stenomeres) (designated as a critically endangered plant species on the Nevada state list) occurs in a canyon at the south end of the Meadow Valley Mountains, a few miles east of the proposed OB. The triangle Geyer milkvetch (Astragalus geyeri var. triquetrus) and Nye milkvetch (A. nyensis) occur within 2 mi of Moapa. The pigmy agave (Agave utahensis var. eborispina) occurs 5 mi west of the OB, within the boundary of the Desert Game Range.

Wilderness and Significant Natural Areas

Potential wilderness areas as well as significant natural areas located within a 50 mi radius of the potential Coyote Spring OB site are listed in Table 3.4.2.2-1.

Human Environment (3.4.2.3)

Employment (3.4.2.3.1)

Clark County

Employment is concentrated in the Las Vegas area of Clark County where over 99 percent of the county's population is employed. The major employment sectors, in descending order of importance, are: tourist-related services (including the gambling industry), trade, construction, and public facilities.

Table 3.4.2.3-1 highlights employment by major sector for Clark and Lincoln counties for the year 1977. The predominance of the gambling industry on Clark County's economy is very noticeable, given its 41.4 percent share of total employment in Clark County, well over twice that for the U.S. as a whole. Manufacturing, on the other hand, traditionally one of the most important sectors in large-sized metropolitan economies, is the source of only 3 percent of the county's 185,198 jobs in 1977.

Historic employment growth by industry is highlighted for Clark and Lincoln counties in Table 3.4.2.3-2. The table indicates that Clark County has been the key growth area for the entire state, with its 6.6 percent average annual growth over the 1967-1977 period. By comparison, this figure was over three times annual employment growth for the U.S. as a whole. Key growth industries were led by construction, (10.1 percent per annum over 1967-1977), services, and government. By any standard, these industries in Clark County have grown dramatically, furthering the dominance of a tourist-based economy.

The baseline labor force is shown graphically in Figure 3.4.2.1-2. In Clark County, the labor force has increased from 55,400 in 1960 to 226,900 in 1980. This steady increase is expected to continue over the next decade and a half and the county labor force is projected to reach nearly 332,000 by 1994.

Clark County's baseline unemployment rate is traced graphically in Figure 3.4.2.1-3. Clark County shows an increasing trend from about 5 percent in the early 1960's to around 8 percent in the late 1970's. This unemployment rate is projected to drop from the current rate of 9 percent and level off at about 8 percent in 1982 through 1994.

Table 3.4.2.2-1. Potential wilderness and significant natural areas within a 50 mi radius of the Coyote Spring site.

POTENTIAL WILDERNESS AREAS	
AREA	MI FROM OB SITE
1. Arrow Canyon Range	5
2. Fish and Wildlife #1	3
3. Fish and Wildlife #2	6
4. Fish and Wildlife #3	14
5. Desert National Wildlife Range	5
6. Delamar Mountains	12
7. Meadow Valley Range	2
8. Mormon Mountains	14
9. Grapevine Spring	38
10. South Pahrocs/Hiko	41
11. Madsger Pass	28
12. East Pahranagat	31
13. Lake Mead National Recreation Area	40
14. Lower Pahranagat Lake	28
15. NV-050-0412	44
16. NV-050-0411	36
17. NV-050-0415 A,B,C	35
18. NV-050-0229	32
19. NV-050-0231	44
20. NV-050-0235	50

SIGNIFICANT NATURAL AREAS	
AREA	MI FROM OB SITE
1. Moapa Valley Fish Sanctuaries	8
2. Desert National Wildlife Range	5
3. Moapa Valley National Wildlife Refuge	14
4. Pahranagat National Wildlife Refuge	28
5. Pahranagat Lakes	26
6. Pahranagat Bonytail	37
7. Pahranagat Valley Fish Sanctuary	43

3200-2

Table 3.4.2.3-1. Total employment and percent share by major economic sectors for counties in Nevada, 1977.

COUNTY	TOTAL EMPLOYMENT 1977	COUNTY PERCENT OF TOTAL EMPLOYMENT	AGRICULTURE SHARE (%)	MINING SHARE (%)	CONSTRUCTION SHARE (%)	MANUFACTURE SHARE (%)	SERVICES SHARE (%)	GOVERNMENT SHARE (%)
Carson City	14,313	4.1	0.2	0.2	6.7	6.6	17.3	43.3
Churchill	5,131	1.5	13.7	(D)	7.7	2.9	12.4	41.3
Clark	185,198	53.1	1.7	(D)	5.6	3.3	41.4	17.5
Douglas	13,365	3.8	2.1	(D)	4.1	5.5	68.4	5.5
Eldo	8,300	3.4	9.9	2.9	4.0	8.7	27.1	21.1
Esmeralda	368	0.1	16.0	(D)	(D)	N.L.	N.L.	36.1
Eureka	620	0.2	70.2	93.7	(D)	(D)	(D)	21.8
Humboldt	3,905	1.1	14.2	(D)	3.3	4.7	18.3	18.3
Lander	1,521	0.4	10.0	39.9	(D)	(D)	3.7	19.5
Lincoln	1,213	0.3	13.7	12.4	(D)	(D)	(D)	36.1
Lyon	3,327	1.0	16.2	16.0	2.6	8.6	7.9	21.8
Mineral	2,555	0.7	1.5	0.6	2.3	(L)	16.5	60.2
Nye	5,661	1.6	3.1	10.4	1.2	0.8	59.5	13.1
Pershing	1,303	0.4	21.9	(D)	0.8	3.1	(D)	22.9
Storey	509	0.1	N.L.	(D)	(D)	2.4	7.5	17.7
Washoe	97,254	27.9	0.3	5.7	7.3	7.0	33.7	15.1
White Pine	3,952	1.1	5.1	17.2	(D)	7.5	12.4	24.0
Total State ¹	348,495	100.0	1.4	1.2	5.7	4.3	37.1	18.4
United States	97,848,874		4.2	0.8	4.0	20.1	17.4	18.2

¹State = study area.

N.L. = Not listed

Source: Dept. of Commerce, April 1979.

059-1

Table 3.4.2.3-2. Nevada employment growth by sector, study area counties, 1967-1977.

COUNTY	TOTAL		AGRICULTURE		MINING		CONSTRUCTION		MANUFACTURING		SERVICES		GOVERNMENT			
	1967	1977	A ¹	1967	1977	A	1967	1977	A	1967	1977	A	1967	1977		
Churchill	3,330	5,131	2.7	642	704	0.9	(b) ²	(b)	(b)	132	141	0.7	66	151	R.6	
Clark	97,951	185,108	6.6	189	312	0.8	260	(b)	(b)	3,910	10,280	10.1	3,661	5,593	4.3	
Eagle	6,027	8,300	3.3	755	824	0.9	93	240	9.9	200	335	5.3	62	72	1.5	
Fernando	318	368	1.5	45	59	2.7	(b)	(b)	(b)	0	0	0	0	0	0	0
Franklin	538	620	1.4	120	125	0.4	195	271	3.3	(b)	(b)	0	(b)	(b)	0.1	0.1
Humboldt	3,048	3,905	2.5	400	554	3.3	754	(b)	(b)	81	127	4.6	(b)	184	495	7.14
Lander	1,086	1,521	3.4	123	152	2.1	(b)	605	(b)	(b)	(b)	0	(b)	49	67	3.7
Lincoln	862	1,213	3.5	146	166	1.3	94	151	4.8	(b)	(b)	(b)	(b)	30	61	0.1
Mineral	2,965	2,555	-1.5	36	39	0.8	63	16	-12.8	4	59	15.5	(b)	461	421	1.6
Nye	8,919	5,661	-4.4	233	175	-2.8	370	586	4.7	(b)	69	(b)	23	41	6.5	7,256
Pershore	1,154	1,303	1.2	274	286	0.4	98	(b)	(b)	18	11	-4.8	(b)	40	(b)	70
White Pine	3,514	3,952	1.2	181	102	5.1	(b)	679	(b)	63	(b)	(b)	295	(b)	460	492
Region Total	112,870	198,165	5.8	1,074	1,232	1.1	865	2,292	2.7	1,971	10,140	10.0	1,684	5,011	0.5	47,818
State Total	200,226	348,495	5.7	6,118	4,748	1.0	1,500	4,311	2.2	8,164	19,817	9.0 ^b	6,714	15,136	0.7	74,007
U.S. Total (millions)	82.5	97.8	1.7	4.6	4.2	-1.2	.6	.8	1.0	1.3	1.9	1.5	10.7	0.1	12.7	1.0

¹A = Average annual growth rate.

²(b) not shown to avoid disclosure of confidential information.

(b) less than 10 wage and salary jobs.

^bRate in doubt because of large number of data points without wage and salary jobs.

Source: BIA, April, 1979.

[62-1]

Lincoln County

Table 3.4.2.3-1 highlights employment by major sectors for Lincoln County and indicates how minor a share the county had of total state employment. Disclosure rules prevent a complete analysis, however, the data indicate heavy specialization in agriculture, which comprises almost 14 percent of total county employment. Manufacturing, trade, or services industries which typically form the basis of well-developed, balanced economy, have not likely been important contributors of county employment. Most employment has occurred in the government sector, which comprised over 36 percent of total county employment in 1977.

Employment growth over the 1967-1977 period is highlighted for Lincoln County in Table 3.4.2.3-2. Despite the fact that the county is rural, its annual growth rate, 3.5 percent over this period, was well above the majority of other counties in the state. Available data indicate that employment growth was centered in the county's government sector. However, employment growth in mining was also impressive.

The baseline labor force is shown graphically in Figure 3.4.2.1-5. In Lincoln County, the labor force has increased from 1,020 in 1967 to 1,719 in 1980. The period is marked with distinct peaks in 1969, 1975, and 1978 and valleys in 1968, 1971-1973, 1976, and 1979.

Lincoln County's baseline unemployment rate is traced graphically in Figure 3.4.2.1-6. Lincoln County shows a decreasing trend from around 12 percent in the late 1960's to about 5 percent in the late 1970s. The Lincoln County unemployment rate is projected to remain at the current 6 percent level through 1994.

Income and Earnings (3.4.2.3.2)

Clark County

Total earnings have exhibited very rapid growth over the 1967-1977 period. Table 3.4.2.3-3 highlights Clark County earnings by major sectors in comparison to other Nevada counties. The county's 1977 earnings equaled \$2.3 billion, well over one-half the total earnings for the state as a whole. Earnings growth equaled 6.3 percent per year over 1967-1977, well above virtually every other county and over twice the national average over the same period. Disaggregating by industry, key growth sectors have been construction, services, and the government sector, while sizable earnings losses have been incurred in mining, and negligible growth has taken place in agriculture.

Table 3.4.2.3-4 highlights per capita income and earnings shares by major industry for Clark County in 1977. The county's 1977 per capita income was \$7,735, above most every other county in the state and greater than that for the United States as a whole. This results from the heavy emphasis on a service-based economy, and the higher wage structures in that industry relative to more rural areas with agricultural-based industries.

Lincoln County

Tables 3.4.2.3-3 and 3.4.2.3-4 also highlight Lincoln County earnings by major industrial sector and per capita income, respectively. Disclosure rules prevent

Table 3.4.2.3-3. Earnings by economic sector, Nevada counties, 1967-1977 (in millions, 1977 dollars).

COUNTRY	TOTAL FARMING:		AGRICULTURE:		NAME:		CONSTRUCTION:	
	1967	1977	GROWTH RATE	1967	1977 GROWTH RATE	1967	1977 GROWTH RATE	1967
Carson City	11.3	13.7	2.2%	10.3	.9%	1.0	.8%	1.4
Carson City	68.1	109.16	8.9	67.6	-1.0	.86%	-1.8	15.86%
Churchill	14.3	45.3	1.5	1.5	4.81	1.1	.16	2.5
Clark	120.1	292.7	6.3	1.37	1.71	1.0	4.6%	1.7
Cook	80.578	131.47	5.2	1.53	2.12	1.4	10%	1.2
Elko	65.22	83.13	2.5	10.3	3.23	-1.3	1.3	1.4
Esmeralda	2.37	3.62	2.7	-1.0	.076	1.1	41%	1.5
Fernando	7.44	7.33	-0.2	1.34	.26	0.6	1.7%	0.6%
Lincoln	11.21	17.18	1.8	1.77	4.63	2.1	1.6%	1.2
Lander	12.06	18.18	1.6	1.37	.90	4.2	10%	1.0
Lyon	6.3	12.15	6.0	1.0	81	16.2	1.3%	1.4
Mineral	10.74	14.45	1.2	1.52	4.6*	2.0	10%	1.6
Mille	12.19	26.31	-1.9	1.07	21.2	50.4	10%	20.3
Nye	104.36	152.67	5.14	14.17	1.14	-2.5	1.34	4.8
Pershing	11.29	11.49	1.2	1.30	4.98	5.8	1.47	1.0
Storey	4.02	5.24	5.7	1.67	0	-20.0	10%	1.0
White Pine	6.46	7.78	1.9	1.07	4.71	17.3	1.10	1.1
White Pine	17.13	44.95	1.0	1.73	4.83	4.3	10%	2.1
State	1463.0	4149.6	6.1	14.34	19.61	0.1	24.6%	1.3
U.S.	1,164,344	3,164,755	2.4	11.32	1.7	2.0	10%	2.4
MANUFACTURING:								
COUNTRY	1967	1977	GROWTH RATE	1967	1977	GROWTH RATE	1967	1977
Carson City	117	11.44	20.4	10.08	21.76	10.7	18.46	11.17
Churchill	81	2.1	9.7	2.63	6.63	0.5	16.45	22.02
Clark	59.18	83.11	1.7	4.22	21.24	570.14	10%	1.0
Douglas	1.8	10.06	10.8	6.13	87.17	9.6	1.5	6.95
Fernando	16.	5	1.7	14.46	21.1	4.4	1.844	18.66
Esmeralda	10	10	0	10	0	10	1.1	10.0
Fernando	10	10	0	10	10	0	100	100
Lincoln	1.05	1.45	1.0	5.10	6.514	2.5	6.48	7.08
Lander	1.1	1.01	0	1.19	6.64	-0.5	2.11	1.17
Lincoln	101	101	0	101	101	0	101	101
Lyon	2.34	4.17	6.2	101	2.63	101	4.26	6.26
Mineral	11	120	1.6	1.1	1.1	0.0	21.70	19.15
Mille	48	421	1.3	105.3	66.4	-7.5	8.93	7.78
Pershing	101	4	101	101	101	101	2.65	3.4
Storey	11.11	12.11	1.1	1.14	1.06	1.05	48.87	12.77
White Pine	101	5.67	101	1.44	1.05	1.6	6.43	1.2
State	102.45	216.74	7.8	101.8	101.76	4.4	356.43	711.26
U.S.	269,036	505,147	1.3	1.17	1.13	1.06	101.101	101.101

Table 3.4.2.3-4. Per capita income and earnings shares in Nevada counties, 1977.

	1977 PER CAPITA INCOME	TOTAL 1977 EARNINGS (000s of \$)	COUNTY % OF TOTAL	AGRICUL- TURE SHARE (%)	MINING SHARE (%)	CONSTRUC- TION SHARE (%)	MANUFAC- TURING SHARE (%)	SERVICES SHARE (%)	GOVERNMENT SHARE (%)
Carson City	7,234	159,163	3.8	0.1	0.2	10.0	7.2	17.5	45.9
Churchilli	6,066	49,916	1.2	9.7	0.2*	5.9	4.1	13.4	44.1
Clark	7,735	2,262,502	54.5	0.2	0.1*	8.7	3.9	42.9	16.3
Douglas	9,030	133,472	3.2	1.6	0.5	8.5	7.5	65.4	5.2
Elko	7,464	83,132	2.0	3.9	3.6	7.2	1.1	27.6	22.4
Esmeralda	5,543	3,623	0.1	10.7	(D)	(D)	(NL)	0	22.2
Eureka	6,149	7,334	0.2	9.5	62.4	0.1	(D)	(D)	17.6
Humboldt	6,168	37,379	0.9	12.4	0.5*	5.4	4.9	17.4	20.6
Lander	6,059	18,378	0.4	4.9	55.1*	(D)	0	3.5	18.4
Lincoln	5,843	12,348	0.3	6.6	18.5	(D)	1.3*	4.9*	35.9
Lyon	6,017	34,651	0.8	13.4	24.5	4.8	12.0	7.8	16.1
Mineral	6,568	26,929	0.6	0.8	1.1	5.0	0.5	12.3	67.4
Nye	5,801	93,673	2.2	0.8	10.6	1.3	0.5	71.7	6.4
Pershing	6,437	13,985	0.3	29.2	(D)	2.3	2.9	(D)	19.0
Storey	5,585	5,240	0.1	0.0	(D)	1.0*	2.1	6.7	18.2
Washoe	9,368	1,162,907	26.1	0.2	0.7	12.4	7.9	30.6	15.3
White Pine	6,608	44,954	1.1	1.5	30.4	1.8*	12.6	9.0	21.1
State Total	7,980	4,148,586	100.0	0.8	1.6	9.3	5.2	37.5	17.6
U.S.	7,026	1,164,755,000		2.2	1.6	6.0	26.2	16.6	17.1

556

*Estimated.

(D) = Data not provided because of disclosure rules.

(NL) = No Listing.

Source: BEA, April 1979.

complete analysis, however, Table 3.4.2.3-3 indicates the relatively rapid growth in total county earnings, 6.0 percent per annum over the 1967-1977 period, and the dominance of agriculture as the leading growth sector. Table 3.4.2.3-4 points out the county's relatively low per capita income of \$5,843; less than three-fourths that for the state as a whole, and well below the national average. Finally, both tables point to the fact that major industries in Lincoln County, mining and government, have exhibited relatively slow earnings growth; this runs counter to their dominance of employment growth statistics.

Public Finance (3.4.2.3.3)

Affected public finance units in the Coyote Spring Valley area include Clark and Lincoln counties, the cities of North Las Vegas, Las Vegas, and Caliente, and Clark and Lincoln county school districts. With over 50 percent of the state's population residing in Clark County, the area's tax base is quite high, ranging from \$138.1 million in the city of North Las Vegas to \$2.5 billion for the county as a whole (Table 3.4.2.3-5). Lincoln County's tax base ranges from \$1.4 million in Caliente to \$25.3 million in the county.

The revenue structure of the potentially affected government units reflect a balanced system with property tax revenues accounting for percent shares of the total general fund revenues ranging from 12.8 percent in the city of North Las Vegas, to 19.9 percent in the city of Las Vegas, to 26.2 percent in the county of Clark. The principal difference between the two cities' and the county's fiscal structure is the dependence of the cities upon intergovernmental transfers; 45 percent for the city of Las Vegas and 53.8 percent for the city of North Las Vegas, as compared to 14 percent for Clark County. The revenue structures of Lincoln County and the city of Caliente reflect a dependence on intergovernmental transfers, which account for 57 percent and 67 percent of revenues for the county and city, respectively.

Public safety expenditures account for the largest single expenditure category in both the counties and cities, ranging from 27.8 percent for Clark County to 52.5 percent for the city of Las Vegas. General administration outlays account for the second largest expenditure category, ranging from 16.3 percent in the city of Las Vegas to 18.0 percent in Clark County. Lincoln County governmental outlays range from 15 percent in Caliente to 26 percent in Lincoln County.

School district revenues and expenditures follow similar patterns found in the other school districts in the state. Instruction expenses account for the largest single outlay, approximately 60-65 percent of total expenditures, excluding capital outlay and debt service. Fixed charges (insurance, pension payments) and operation and maintenance of the physical plant account for another 26.2 percent. Revenue sources for the school districts are principally from state and local contributions. In the Clark County School District, state and local payments comprise 45.4 percent and 50.7 percent, respectively. Revenue sources in the Lincoln County School District are weighted toward state contributions, 59 percent, with local payments being 25 percent of total revenues.

Population (3.4.2.3.4)

There is no urban development near the proposed operating base, although some development exists farther south in the Moapa Valley in the areas of Glendale, Logandale, and Overton.

Table 3.4.2.3-5. Assessed evaluations, indebtedness limitations, and reserve bonding capacities for selected political jurisdictions in Clark County, 1978-1979.

AREA	ASSESSED VALUE	INDEBTEDNESS LIMITATION	OUTSTANDING G.O.	RESERVE BONDING CAPACITY
Clark County	\$ 2,463,414,900	\$246,341,500	\$ 4,871,000	\$241,470,500
Schools	\$ 2,463,414,900	\$369,512,200	\$175,539,200	\$193,973,000
North Las Vegas	\$ 138,149,100	\$ 41,444,700	\$ 6,695,000	\$ 34,749,700
Las Vegas	\$ 682,282,500	\$204,684,800	\$ 5,955,000	\$198,729,800
Lincoln County	\$ 25,320,100		\$ 52,000	\$ 2,480,000
Lincoln County School Dist.	\$ 25,320,100		0	\$ 21,522,100
Caliente	\$ 1,422,600		0	\$ 995,600

3527

Source: Local Government Green Book, Department of Taxation
State of Nevada, 1978.

Clark is the fastest growing county in Nevada, with an estimated 4.2 percent average annual growth rate between 1970 and 1980. This increase is primarily the result of in-migration into Las Vegas proper, which accounts for nearly half of the county's population. The population has a high proportion of urban residents (nearly 95 percent of the total), and a density of 42 people per square mile, the highest in the state. This high growth rate is expected to continue until 1985 (5.11 percent 1980-1985), then decline slowly to 4.6 percent from 1985 to 1990. The county's present population of 410,817 is projected to reach 659,700 by 1990.

In 1977, approximately 79.1 percent of Lincoln County's population, 2,350 persons, resided in the Caliente-Panaca-Pioche area. Lincoln County's population grew at an average annual rate of 1.7 percent between 1970 and 1979.

Housing (3.4.2.3.5)

Clark County has experienced rapid housing growth in the last two decades, having had one of the highest growth rates in Nevada. The county, which contains the Las Vegas metropolitan area, experienced large gains in housing supply between 1960 and 1970, from 43,000 to nearly 93,000 units. This represented an average annual growth rate of 8 percent. In the succeeding six years, housing grew at an average annual rate of 9.5 percent, almost doubling again to 160,057 housing units. By 1976, Clark County alone comprised 60 percent of Nevada's total supply of housing.

The proportion of Clark County's housing stock in single-family units increased from 47.8 percent in 1970 to 48.9 percent in 1976. Multi-family unit's share declined to 39.3 percent from 42.9 percent, and mobile home share increased from 9.3 to 11.8 percent. Over 8,800 conventional housing units were added each year from 1970 to 1979, with a maximum of over 14,000 in 1978. From 1970 to 1976 there were an estimated 1,450 mobile home deliveries per year. In 1970, about 58 percent of the housing units were owner-occupied. In the same year, 93 percent of housing was located in the greater Las Vegas-Boulder City axis.

Lincoln County has had a mixed experience in housing growth over the last two decades. From 1960 to 1970 the number of housing units declined from 1,167 to 1,043 units. But from 1970 to 1979, housing recovered slightly, growing to an annual rate of 0.15 percent, to reach an estimated 1,057 units by 1979. In 1970, 78.6 percent of the housing stock was in the form of single family units; 6.5 percent in multi-family units; and 14.9 percent in mobile homes.

It is estimated from annual permits authorizing residential construction that over the 1970 to 1979 period, an average of 1.4 conventionally built housing units were added to the housing stock each year with a maximum yearly authorization of 5 units in 1976. In 1970, the owner-occupancy rate was 70.3 percent.

Community Infrastructure (3.4.2.3.6)

Organization

Las Vegas and North Las Vegas, the principal incorporated cities, have a council/mayor form of government. Much of the Las Vegas Valley is unincorporated, however, and governmental services are provided by Clark County. Clark

Coyote Spring Valley

County functions much like an urban city and provides the entire range of urban services, such as police and fire protection, to residents of the unincorporated areas. Since Lincoln County has low population densities and unincorporated areas, it also provides all governmental and infrastructural services.

Education

In 1979, there were 87,440 pupils in the Clark County School District. There are 109 public schools, including 72 elementary schools, 16 junior high schools, 5 junior-senior high schools, 11 senior high schools; and 5 special schools. A total of 3,730 teachers were employed by the public school district, which had a pupil/teacher ratio of 23.4 to 1. Excess capacity is negligible.

Education in the Caliente area of Lincoln County is provided by the Lincoln County School District. Enrollment in 1978 totaled 911 pupils, which represents a 1.7 percent average annual growth rate over 1970 enrollment levels. Caliente, Panaca, and Pioche each have one elementary school, with Panaca having the one high school that serves the county's residents.

Health Care

In 1978, eight hospitals were located in Clark County. In addition, 919 long-term beds were available. Approximately 500 physicians serve residents of the area, along with 1,400 RNs, 590 LPNs, and 140 dentists. Health care in Caliente is provided by one 19-bed, acute-care hospital, a nine-bed convalescent facility, two doctors, and six registered nurses.

Police Protection

The Las Vegas Metropolitan Police Department, a city and county agency, currently has about 740 officers serving a 7,800 mi² area. Three other law enforcement agencies serve outlying areas. State highways in the area are under the jurisdiction of the Nevada State Highway Patrol.

Caliente has four full-time and two part-time patrolmen, while the Lincoln County Sheriff's Department operates out of Pioche with four full-time and two part-time patrolmen.

Fire Protection

The Las Vegas Fire Department has 250 firefighters and support personnel and nine fire stations. Las Vegas presently maintains a fire insurance rating of "3" out of "10," with lower numbers representing higher quality service.

In Lincoln County, fire protection is provided by stations at Caliente and Pioche, which are staffed by approximately 20 volunteer personnel each.

Water Supply and Distribution

The Las Vegas Water District supplies water from groundwater and surface water sources. Additional surface supplies are being obtained that exceed requirements. Treatment capacity is 200 mgd and the plant is run at 160 mgd on average.

during summer months. However, a 200 mgd addition is being constructed, giving a total capacity of 400 mgd, and should be on line in 1981.

The water supply system of Caliente is adequate for current needs. Historically, the sources of water for Caliente have been a number of wells, many of which have been abandoned due to either deteriorating water quality or insufficient production capacity. Three wells comprise the current system. The primary water source is well No. 8, which has a 900 gpm capacity. The other two wells, which when initially constructed yielded high flows, have begun pumping sand, significantly reducing their yields. The Union Pacific Railroad also has additional wells not being used, which could be leased by the city.

The existing water supply for Caliente meets existing demands, although some improvements to the system are necessary. Caliente has sufficient water rights to support a population several times its existing size, and it has been estimated that, with improvements to the system, a population of 7,300 persons could be served.

The city's distribution system consists of some 9.5 mi of pipeline from 2 in. to 10 in. diameter cast iron pipe. Two reservoirs with total capacity of 805,000 gallons receive flow when pumping capacity exceeds demand.

The Panaca water system is owned and operated by the Panaca Farmstead Association, which is made up of subscribers to the system. The water system currently serves a population of 725 people. The sources of water are two wells with a combined capacity of over 1,000 gpm. Although there are sufficient water supplies to serve more than twice the existing population, the storage and distribution system is inadequate.

Pioche's water system is owned and operated by the Pioche Public Utilities. Approximately 700 people are served, including those in the Caselton area. The water supply is from three wells which have a combined capacity of 625 gpm. The Pioche water supply receives no treatment and meets state drinking water standards. The existing water supply has essentially no excess capacity. A program to upgrade this system is scheduled to begin in 1980. This upgrading will be directed primarily at providing a more reliable system, however. No measures are planned for an increase in supply.

Wastewater Collection and Treatment

The Las Vegas area has two major treatment plants. The city of Las Vegas operates a high-rate trickling filter plant with a present capacity of 30 mgd, with an expansion underway to 37.5 mgd. Present flow into the plant is approximately 27.5 mgd. Another treatment facility is operated by Clark County. Present capacity of that plant is 40 mgd, of which approximately 35 mgd is being utilized. Combined capacity of the Caliente, Panaca, and Pioche wastewater treatment systems is about 5,400 people. Current combined contributing population is above 2,365, with Panaca exceeding design population by 25. The available capacity for 3,060 additional people in the Caliente and Pioche systems depends upon elimination of stormwater from the Caliente collection system which overloads the plant during rainfall.

Caliente's treatment facility, constructed in 1972, was designed to serve 3,200 people, or 0.4 MGD. Current average flow is 0.25 MGD, with peaks as high as 0.7

Coyote Spring Valley

MGD following storms. The plant operates below its hydraulic capacity but does not meet discharge standards.

Solid Waste

Sanitary landfill facilities for the Las Vegas metropolitan area are operated by a private company. There are approximately 800 acres available for solid waste disposal, with 80 acres currently being used. This indicates a current excess capacity of 90.0 percent, or 720 acres.

There is no centralized sanitary landfill serving Caliente, Panaca, and Pioche. A facility is anticipated in the near future.

Parks and Recreation

Park and recreation facilities provided by the city of Las Vegas include 33 parks, 32 lighted ball fields, 28 lighted tennis courts, 11 community centers, and 7 swimming pools. City park facilities are utilized at full capacity and use of those facilities continues to increase. Land acquisition for new parks or expansion of existing facilities is not planned in the near future.

Urban recreational facilities in Caliente, Panaca, and Pioche are limited. However, within 50 mi of the communities a number of developed and dispersed recreational sites are available to the residents.

Parklands

There are a number of parklands with a number of campgrounds and facilities around the Coyote Spring area (Table 3.4.2.3-6). Camping and boating opportunities are abundant at Lake Mead National Recreation Area and hunting opportunities are within easy access at the Desert Wildlife Range, Pahranagat National Wildlife Refuge and Overton Wildlife Management Area.

There are a number of recreation sites outside of the assumed 50 mi "sphere of influence" of the proposed operating base but are within the sphere of influence of the surrounding communities expected to receive some of the population immigration. These areas are expected to be attractive to recreationists from the operating base because of their facilities development or unique physical characteristics. These areas include: Lake Mead Recreational Area with 176,000 acres of surface water, 59 boat launching lanes and 1,481 overnight campsites. Red Rock Canyon and Virgin River Recreational Lands both have camping sites and striking scenery. Toiyabe National Forest (Las Vegas Ranger District), 35 miles west of Las Vegas, has 5 campgrounds with 225 campsites, hunting, fishing and a developed snow ski resort at Mt. Charleston. Zion and Bryce National Parks are a little over 100 mi east of the proposed OB site; however, because they are national parks of recognized natural beauty, some weekend and vacation visits from this site are expected.

Water Related Recreational Facilities

Because of Lake Mead Recreation Area, this area is rich in water based recreational facilities. Lake Mead and Mohave Lake total 192,000 surface acres for

Table 3.4.2.3-6. Developed recreation sites in the Coyote Spring vicinity.

SITE NAME	ACTIVITIES	UNITS	± MILES FROM COYOTE SPRING
Lake Mead National Recreation Area			
Overton Beach	Boating Fishing Hunting Camping Picnicking	3 ramps — — 20 camps	50
Rogue Spring	Camping	15 camps	55
Echo Bay	Camping Boating	205 camps 7 ramps 20 slips	65
Desert National Wildlife Range	Hunting	—	10
Pahranagat National Wildlife Refuge	Hunting Fishing	— —	40
Key Pittman Wildlife Management Area	Hunting	—	55
Overton Wildlife Management Area	Hunting	—	35
Valley of Fire State Park	Camping Picnicking	50 camps	50

3805

¹Nevada State Highway Department, 1978.

Coyote Spring Valley

fishing, boating and waterskiing, 11,800 lineal feet of swimming beaches and 59 boat lanes. In Clark County there are 16 mi of streams suitable for fishing, primarily at Cold and Willow Creeks, west of Las Vegas, (Nevada State Park, 1977).

Snow Related Recreational Facilities

There is one snow skiing area in this region, Mt. Charleston, east of Las Vegas. There are 40 acres of ski slopes of beginner and intermediate levels at Mt. Charleston. Many skiers in southern Nevada utilize the ski areas at Brianhead, Utah, approximately 150 mi northeast of the proposed OB site. Cross-country skiing and snow play areas are in short supply in this region. The primary source is in the Spring Mountains east of Las Vegas.

ORV and Other Forms of Dispersed Recreation

This area has a number of ORV areas, primarily because it has the population base in Las Vegas to support such activities. Some of the most popular sites include the Las Vegas Dunes, immediately north of Nellis Air Force Base; Dry Lake river basin in Dry Lake Valley 30 miles south of the proposed OB site; and Meadow Valley Wash immediately northeast of the proposed OB site. One of the nation's largest motorcross events, the Mint 400, is held annually in Dry Lake.

There are over 200 mi of mountain trails (hiking and vehicle) in this region, primarily in the Desert Wildlife Range and in the Mt. Charleston areas (Nevada State Parks, 1980).

Quality of life (3.4.2.3.7)

Two types of indicators are utilized to discuss quality of life: secondary statistical indicators and survey responses to a questionnaire by the Governor's Commission on the Future of Nevada. The former describes variables in such areas as education, population, health, economics, housing, and public safety. When correlated with survey response opinions, these indicators suggest overall attitudes and perceptions of quality of life.

Being a major gambling and service center for a large area, Las Vegas provides employment opportunities for a large number of younger, highly mobile persons. Crowded living conditions are uncommon in the majority of urban communities in Clark County, with the exception of major population centers such as Las Vegas. Due to the popularity of Las Vegas as a recreation resort with a moderately good climate, many visitors frequent the city, and some remain to obtain employment.

Nevada citizens as a whole define their values as open space, good climate, and relaxed lifestyles. Residents of Las Vegas differ only in emphasis. Respondents from Las Vegas rate climate highest, with open space of secondary importance. When questioned about acceptable changes that could occur in their lifestyle, 80 percent of Clark County residents stated that they would be willing to utilize more public transit, while 55 percent would accept increased population growth. Deterioration in air quality, water availability, reduced public services, increased traffic congestion, increased federal regulation, and reduced access to out-of-doors were deemed not acceptable by the majority of those surveyed. Respondents surveyed indicated the three most important problem in their area was transportation

(facility and circulation) problems, crime and police problems, and environmental issues.

Clark County has a ratio of 3.4 officers/1,000 population, a level below the state mean of 3.8, but well above the national mean of 2.8. The crime rate of Las Vegas is over twice the rate observed in the nation. Public safety is also affected by the level of social disorganization in a community. In Clark County, the divorce rate/1,000 was 18.6, slightly above the Nevada mean of 17.9 and over three times the national mean of 5.5. The suicide rate/100,000 population was 23.3, nearly twice the national rate, but below the state mean of 26.7/100,000. The alcoholism rate/1,000 population was 46.0, a level slightly above other study areas but below the state mean of 67.7. These variables define a high level of social disorganization in the community.

Economic indicators such as the unemployment rate and the civilian labor force growth rate of 1977 are both higher than the national and other study area means, but consistent with the state mean rate. In Clark County, the labor force has grown 6.3 percent per year from 1970 to 1977. The unemployment rate is also high because of continuous in-migration of people looking for work. The per capita income level in 1977 was also much higher than many rural areas but lower than the state mean of \$7,980.

The Governor's Commission Survey inventoried attitudes toward future economic growth. Three-fourths of the respondents from Clark County felt it was of major importance to develop employment areas other than gambling. However, about half did not feel past population growth had been beneficial to the community or would be in the future. People indicated that recreation, agriculture, and light manufacturing should be expanded in the next few years, followed by gambling. Presently, the major employment areas are retail trade, services, construction, transportation, and public utilities.

Regarding politics, residents felt their interest and ideas were not being represented by government officials. They wanted to see more state regulation in the next 20 years concerning conservation of agricultural lands, energy conservation, environmental protection, public utility regulations, and wildlife management.

When questioned about public services and the amount of public taxes that should be spent on these various services, people felt more money should go to police protection, transportation, land use planning, health services, services to senior citizens, parks and recreation, and colleges and universities. Sixty percent of those surveyed felt the present health services were adequate.

In response to questions dealing with the perceived adequacy of the educational institutions in Clark County, half the persons felt that the school districts in their area were not preparing students adequately for the future. There was a higher level of satisfaction expressed regarding the college and university programs.

In summary, the urban center of Las Vegas makes Clark County unique among most rural-type Nevada counties. Clark County, with its large population and active economy, faces problems that are not present in small town communities, and therefore, presents a very different set of conditions to be evaluated in a study of potential M-X operating bases.

Since Lincoln County is a rural county similar in nature to White Pine County, it is expected that basic quality of life parameters detailed in Section 3.4.4.3.7 (Ely OB) will be similar.

Traffic and Transportation (3.4.2.3.8)

The proposed base site is 46 mi north of Las Vegas, Nevada, along U.S. 93, which provides primary access to the area. Additional access is by State Route 7, running southeast from the site until connecting with Interstate 15, about 25 mi away, near Moapa. A schematic map of the existing road network around Coyote Spring with 1978 traffic volumes is presented in Figure 3.4.2.3-1.

Railroad service is provided by Union Pacific Railroad. Las Vegas is the site of a major international airport.

Energy (3.4.2.3.9)

Coyote Spring is located in a sparsely populated area with no natural gas service. The closest natural gas service is about 8 to 10 mi north of Las Vegas.

The closest petroleum product pipeline is the CAL-NEV Pipeline which terminates at Las Vegas. The bottled gas, fuel oil, gasoline and diesel fuel distributors currently meet the regional demand but are not capable of handling a large increase in fuel demand.

There are no electrical load or power system facilities at Coyote Spring. This area is on the southern boundary of the Lincoln County Power District (LCPD), which has a system peak demand of approximately 16 MW. There are no suitable transmission lines in the immediate area. A 69 V Transmission line from the Moapa generating plant passes through the area; however, it is operating at capacity and could not supply additional electricity to Coyote Spring. The proposed Intermountain Power Project would have transmission lines running through the Coyote Spring Valley area.

Land Ownership (3.4.2.3.10)

The proposed operating base is located entirely on federal land presently administered by the BLM. However, the Desert National Wildlife Range's boundary lies about 3 mi west of the proposed airfield location. There are also about 6,240 acres of private land in the area.

Land Use (3.4.2.3.11)

The prime economic activity in the area is livestock grazing on lands administered by the BLM. The site is adjacent to the Desert National Wildlife Range, established by the federal government, and administered by the U.S. Fish and Wildlife Service.

Clark County Regional Planning Council provides guidance to localities. The County General plan was approved in 1966 and is going through an updating process. The long-run carrying capacity of Las Vegas Valley is nearly 1 million persons. At present, the population is near 450,000, with development for an additional 100,000.

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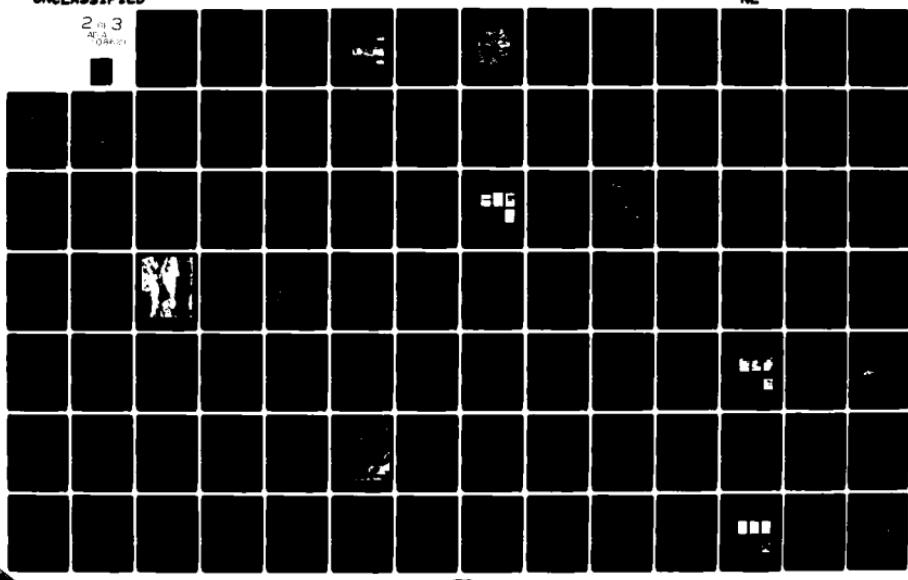
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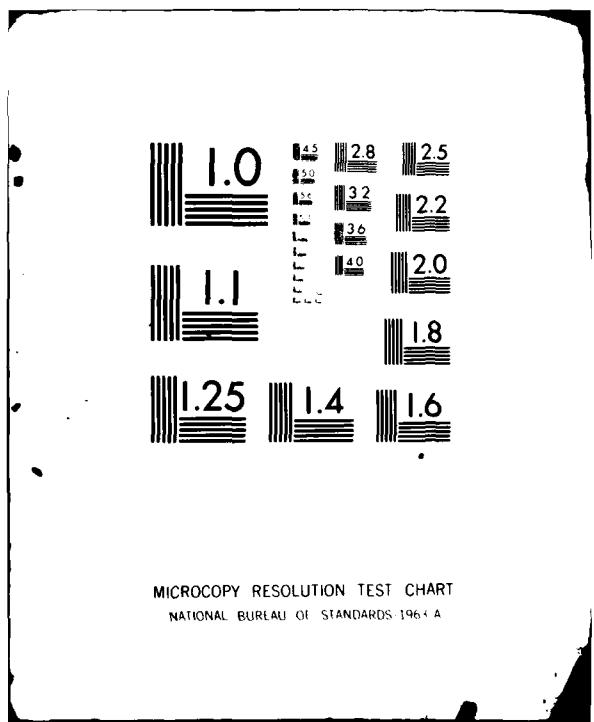
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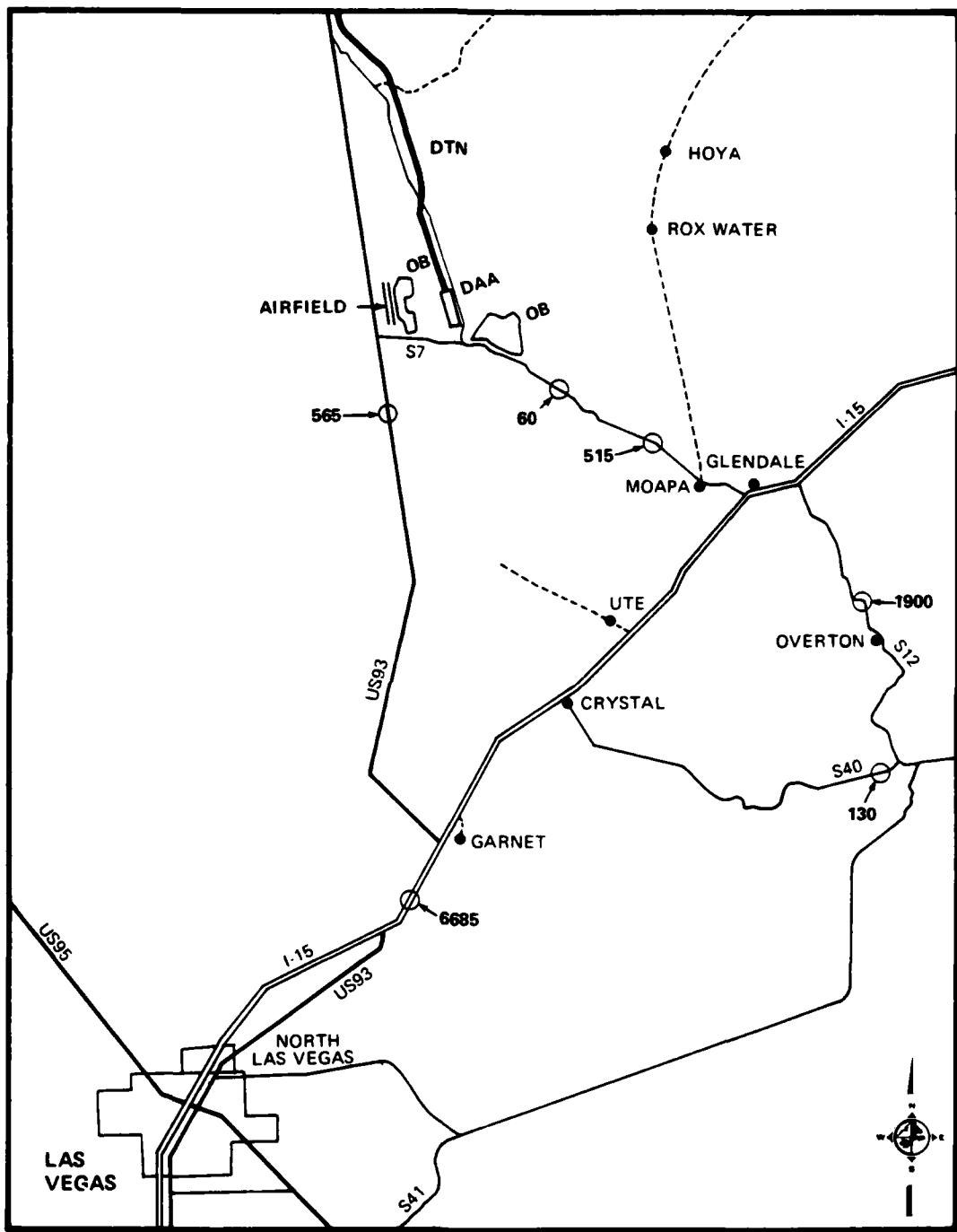
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LEGEND 000 - 1979 TRAFFIC VOLUMES: COYOTE SPRINGS, NEVADA

SCHEMATIC: NOT TO SCALE

SOURCE: NEVADA DEPARTMENT OF TRANSPORTATION

2183-A

Figure 3.4.2.3-1. Existing traffic volumes in the vicinity of Coyote Spring.

Coyote Spring Valley

Clark County's dominant land uses are open space and vacant land. Of the urban land uses in the county, single family residential (6,000 to 7,000 sq ft) and estate residential occupy the largest land areas with industrial and commercial areas occupying small proportions of the county.

The city of Las Vegas comprises 35,434 acres of which 36.0 percent are undeveloped. Residential and circulation land uses comprise approximately 52.5 percent of the total land area. The remaining land uses and their respective proportions of the city's total land are: parks and open space, 3.6 percent; commercial, 3.2 percent; public/institutional, 3.0 percent; and industrial, 1.7 percent.

Immediately northeast of Las Vegas lies the city of North Las Vegas. The city comprises a total of 22,169 acres, of which 79.0 percent is vacant. The remaining developed land uses and their proportion to the total land area includes: residential, 7.5 percent; circulation/public/semi-public, 9.7 percent; commercial, 2.2 percent; industrial, 1.0 percent; and parks, 0.6 percent.

In the rural communities outside the Las Vegas Valley, some expansion is possible. The small towns of Mesquite, Burkerville, Logandale, Overton and Glendale are basically farming communities and the homes are developed near the farming areas. In Lincoln County, the communities of Caliente, Panaca, and Pioche are located between 200 and 120 mi from the OB location. Urban land in Caliente comprises 867 acres; in Panaca, 381 acres; while urban land in Pioche equals 183 acres. Caliente's dominant land uses are 82 percent undeveloped, 6 percent streets, and 5 percent residential. Panaca has 38 percent undeveloped, 31 percent streets, 7 percent residential, while Pioche has 39 percent undeveloped, 32 percent streets, and 19 percent residential.

Agriculture

There are no croplands in the vicinity. The site is in the BLM Virgin Valley and Caliente planning units (PU) with 90 percent in Virgin Valley and 10 percent in Caliente. The BLM permits no grazing in the former PU and 40.1 acres per AUM in the latter. A total of 73,235 AUMs is allowed in the two PUs.

Recreation

No fishing or concentrated recreation sites are near the site. Since the region is entirely in public domain, it is subject to dispersed recreational use. The Coyote Spring/Meadow Valley Wash is used by off-road vehicles.

Mining

There are no known mines in the area, and the potential for future mining activities is expected to be low. There is no known oil or gas exploration.

Native Americans (3.4.2.3.12)

Southeastern Nevada was a major Southern Paiute population center in late prehistoric and early historic times, and is therefore associated with dense habitation site concentrations and a wide variety of features which are culturally sensitive

Coyote Spring Valley

to local Indians. The Kane Springs Wash, Pahranagat Wash, and the entire course of the Muddy River to the confluences of Meadow Valley Wash and the Virgin River, are known to contain dense concentrations of ancestral campsites and farming settlements. Immediately west of the proposed OB site is the Sheep Mountain National Register District. This district has a high density and unusual integrity of aboriginal habitation sites.

The Moapa Indian reservation is located in the Kane Spring/Coyote Spring vicinity, southeast of the proposed OB site. The reservation consists of 1,186 acres of tribally owned land; the Moapa band of Indians proposes to withdraw an additional 70,000 acres.

Farming and ranching provide much of the reservation employment, but 40 percent of the Moapa labor force of 75 is unemployed. However, a construction company has been created; a leathershop started; and a greenhouse horticultural program initiated. The tribe plans to build a restaurant, gas station, and small museum off U.S. 25 by the exit to Valley of Fire State Park, thereby benefiting from the park's tourism.

Native American cultural resources in the area of potential direct disturbances are poorly documented. The Muddy River area, however, is known to contain dense concentrations of historic and prehistoric village sites, as well as important sites which are culturally sensitive to local Southern Paiutes. The foothill and mountain regions surrounding the proposed OB site are expected to contain important pine-nut groves and spiritual areas. The Arrow Canyon Range adjacent to the siting location is regarded as sacred by Moapa Southern Paiutes. In addition, lowland regions of the OB siting area support native fauna, such as the desert tortoise, which have significance in traditional cosmologies; and native flora, which continue to be used by local Indians for foods, medicines, and craft materials. Site-specific cultural resource data are being gathered in field studies at the Moapa Reservation.

Archaeological and Historical Resources (3.4.2.3.13)

Very little archaeological research has been conducted in the vicinity. The Sheep Mountain Range National Register District is located immediately west.

The potential is high for the occurrence of archaeological and historic sites eligible for the National Register of Historic Places in upper tributaries to the Muddy River and the upper bajada zone of the Sheep Range. Approximately 40 percent of the land within a 20 mi radius of the proposed base location is predicted to contain a large number of historical properties.

Paleontologic Resources

When the White River was flowing during Pleistocene time it cut through deposits of older lake bed sediments in the bottom of Coyote Spring Valley. While fossils are not known from these sediments, they are potentially fossil bearing. Just south of Coyote Spring Valley, the river bed cuts through the Muddy Creek formation which, near Moapa, contains a vertebrate fauna. Paleozoic rocks containing fossils outcrop in the mountains east and west of Coyote Spring Valley.

Delta



DELTA (3.4.3)

Introduction (3.4.3.1)

The area of analysis (AOA) for the Delta operating base includes Millard County. The AOA is located in the central section of the designated region of influence (ROI) as shown in Figure 3.4.3.1-1. Delta and Fillmore are the major settlements in the AOA. This section and Chapter IV detail important environmental characteristics of Delta and vicinity and the proposed base site, respectively. Construction and operation of an OB is discussed in Section 4.3.

Millard's first settlement was in Fillmore in 1851, which established the territorial capital of the Utah Territory. Railroads helped develop agriculture in this area. In 1878, the Utah Central Railroad was completed through West Millard County to Millard in Beaver County. The Utah Central later joined Utah Southern Railroad at Lynndyl. The Union Pacific Railroad extended a spur line to Fillmore in 1923 to ship sugar beets, grain, and livestock to markets.

Agriculture has continued to dominate the economy of Millard County, accounting for about one-third of the total 1977 county work force of 3,400. Principal agricultural products include feed grains, meat, and dairy products. The primary food processing center is Delta, with Delta Valley Farms and Terrel Meats. Mountain Mushrooms, with 120 employees, produces and processes mushrooms.

Other Products

Major anticipated activities in the county include the Intermountain Power Project (IPP), Continental Lime and Martin Marietta Cement Plants, and Precision Built Modular Home Manufacturing. IPP is expected to employ over 2,500 during the peak construction period. The other three anticipated projects are expected to create a total of about 400 jobs, beginning in 1980 and continuing through 1994.

Table 3.4.3.1-1 presents employment projections over the 1980-1994 period for Millard County. These forecasts are separated into Baseline 1 and Baseline 2. The first set of projections are essentially an extrapolation of 1967-1978 growth trends in Millard County. Baseline 2 includes Baseline 1 plus the major anticipated projects described above. Developed by the University of Utah's Bureau of Business and Economic Research (BBER), forecast employment by place of residence and not place of work, as in Tables 3.4.3.3-1 and 3.4.3.3-2. In the case of Millard County, many persons working in the county live elsewhere, thereby reducing BBER's employment figures. In comparison to the 1977 employment figure of 3,416 presented in Tables 3.4.3.3-1 and 3.4.3.3-2, employment by place of residence for this same year was equal to 3,030 jobs (Utah Department of Employment Security, 1980). Employment by place of residence for 1978 and 1979 equalled 3,220 and 3,359 jobs, respectively. Forecasts for Baseline 1 show a drop in 1980 employment to 3,161 then a steady increase through 1994; an average annual growth is projected to equal 1.7 percent. The total number of jobs would increase by 858 over the 1980-1994 period. The Baseline 2 estimate for 1980 employment is 3,964, or 803 jobs more than the Baseline 1 figure. Principally the result of IPP, but also due to the other anticipated projects, Baseline 2 increases at an average annual rate of 17.1 percent between 1980 and 1985. County employment total reaches its peak of 8,717 jobs in that year. During the next five years, county employment is expected to

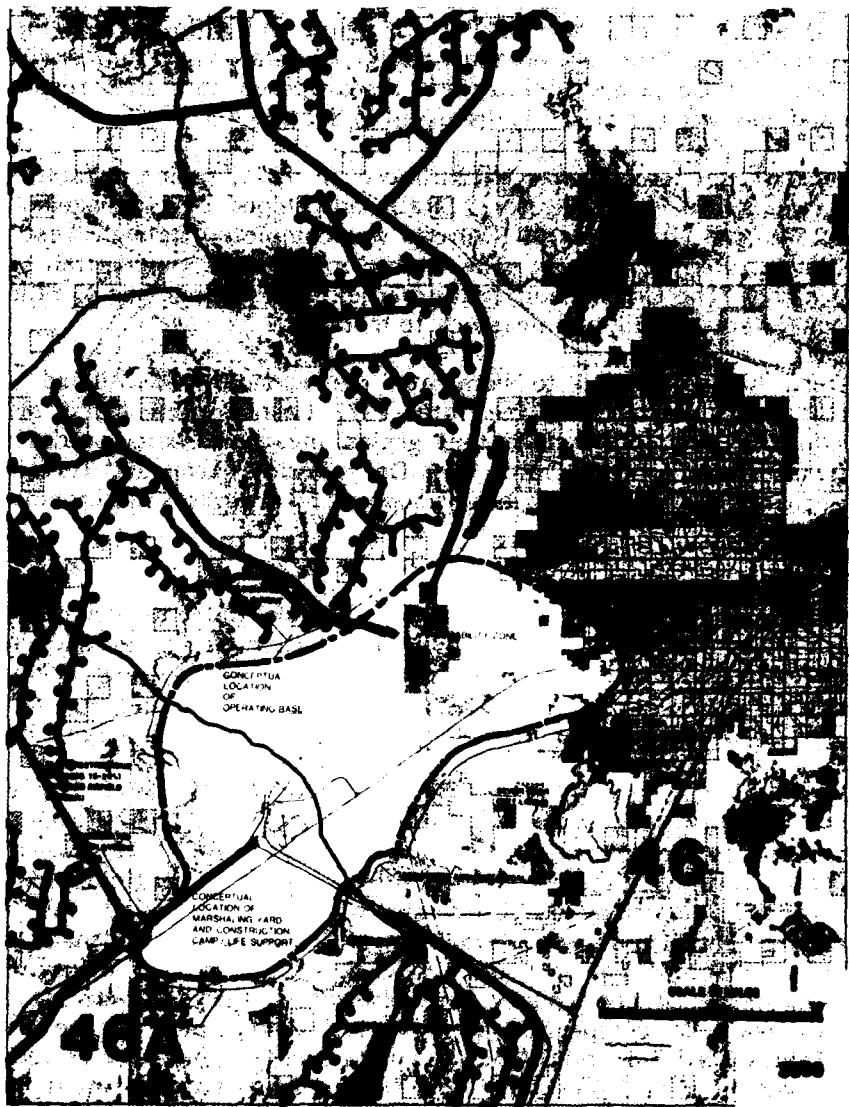


Figure 3.4.3.1-1. Area of Analysis (AOA) for the Delta vicinity.

Table 3.4.3.1-1. Projected employment by major industrial sector, Millard County, 1980-1994.

MILLARD COUNTY	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Baseline 1															
Agriculture	1,021	1,022	1,023	1,023	1,025	1,026	1,026	1,026	1,029	1,029	1,030	1,032	1,032	1,032	1,034
Mining	42	41	42	43	44	45	46	47	48	49	51	52	53	54	56
Contract Construction	47	49	51	53	56	59	61	63	64	65	67	69	69	71	73
Manufacturing	266	271	279	288	296	305	311	318	324	331	337	343	350	357	364
Transport, Commun., Utilities	181	188	195	202	211	220	225	232	237	243	249	254	259	264	269
Wholesale & Retail Trade	543	564	587	612	639	668	683	697	712	728	743	755	765	777	789
Finance, Ins., Real Estate	54	56	59	63	66	70	72	74	75	77	79	80	81	82	83
Services	234	247	262	276	293	311	320	328	337	346	357	363	370	377	384
Government	661	678	696	716	736	757	768	777	786	796	804	807	809	810	811
Non-Farm Proprietors	111	115	121	126	131	138	141	143	147	150	152	154	156	158	160
TOTAL	3,161	3,234	3,316	3,403	3,498	3,590	3,653	3,705	3,759	3,814	3,869	3,907	3,946	3,983	4,019
Baseline 2															
Agriculture	1,021	1,022	1,023	1,025	1,026	1,028	1,028	1,030	1,030	1,030	1,032	1,032	1,033	1,034	1,034
Mining	73	71	138	268	270	272	273	274	275	275	276	277	279	280	281
Contract Construction	599	711	741	1,058	2,372	3,473	3,018	2,928	2,382	1,036	123	114	115	119	120
Manufacturing	272	278	389	460	479	499	503	510	513	510	511	517	523	530	537
Transport, Commun., Utilities	194	203	215	223	255	421	558	653	809	916	914	919	925	930	936
Wholesale & Retail Trade	616	639	697	727	869	1,021	1,019	1,032	1,019	928	879	896	907	922	934
Finance, Ins., Real Estate	66	71	79	84	111	137	137	138	133	116	106	106	109	110	112
Services	283	308	354	368	483	605	596	613	597	514	478	489	497	506	520
Government	704	730	756	793	893	986	1,003	994	929	891	897	902	906	909	911
Non-Farm Proprietors	135	145	159	179	219	268	264	269	259	221	201	203	206	211	212
TOTAL	3,964	4,182	4,552	5,180	6,981	8,717	8,381	8,452	7,494	6,476	5,407	5,449	5,495	5,547	5,585

SOURCE: Bureau of Business and Economic Research, University of Utah, 1980.

decrease by 3,310 jobs; average annual growth over the 1985-1990 period would equal - 9.1 percent. This large reduction in employment marks the completion of construction of IPP (Figures 3.4.3.1-2 through 3.4.3.1-4). These projects in Millard County would very likely induce significant stress on the local economy as industries would attempt adjustment. Local labor shortages, then surpluses in later years, wage inflation, and in-migration of new workers in early forecast years, then rapid out-migration later in key occupations would be likely events. After 1990 under Baseline 2, the county's employment is expected to return to positive growth, with 0.9 percent average annual growth rate over the period 1990-1994.

Natural Environment (3.4.3.2)

Groundwater (3.4.3.2.1)

The principal sources of groundwater recharge are probably seepage losses from streams, the Sevier River, and canals and irrigation ditches. Most of the precipitation which provides recharge falls as snow during the winter on the coarse unconsolidated sediments along the north and east edges of the basin.

Records compiled by the U.S. Geological Survey and groundwater level measurements taken in 1979 and 1980 indicate the depth to groundwater is less than 10 ft with several flowing wells reported. However, depths to water exceed 200 ft along the valley margins at higher topographic elevations. The Utah Division of Water Resources reported a slight rise in groundwater levels between 1977 and 1978, but an overall decrease of about 6 ft since 1955.

Groundwater usage in the Sevier Desert averaged 28,000 acre-ft per year for the 15-year period from 1963 to 1977. Recent groundwater withdrawal has significantly increased, reaching 50,300 acre-ft in 1977. Of that amount, 46,800 acre-ft were used for irrigation, 2,000 acre-ft for industrial use, and an additional 1,500 acre-ft for municipal and domestic use.

Surface Water (3.4.3.2.2)

The principal sources of surface water supply are inflow of the Sevier River and snowmelt from surrounding mountains. Short-term high-intensity summer thunderstorms do not contribute significantly to the usable water supply. Perennial streams (smaller than the Sevier River) originate outside the basin and in mountains surrounding the basin. These streams seldom flow far in the valley bottom because water percolates into the basin fill. Except during periods of extremely high runoff, all river water is stored in Gunnison or the DMAD reservoirs and diverted for irrigation through a system of dams and canals.

Air Quality (3.4.3.2.3)

A summary of some climatological parameters relevant to air quality appear in Table 3.4.1.2-1. Particulate emissions for Millard County are 4,541 tons/year from all sources except windblown fugitive dust. The baseline levels in Millard County for CO, SO_x, NO_x and hydrocarbons are listed in Table 3.4.1.2-2. Delta

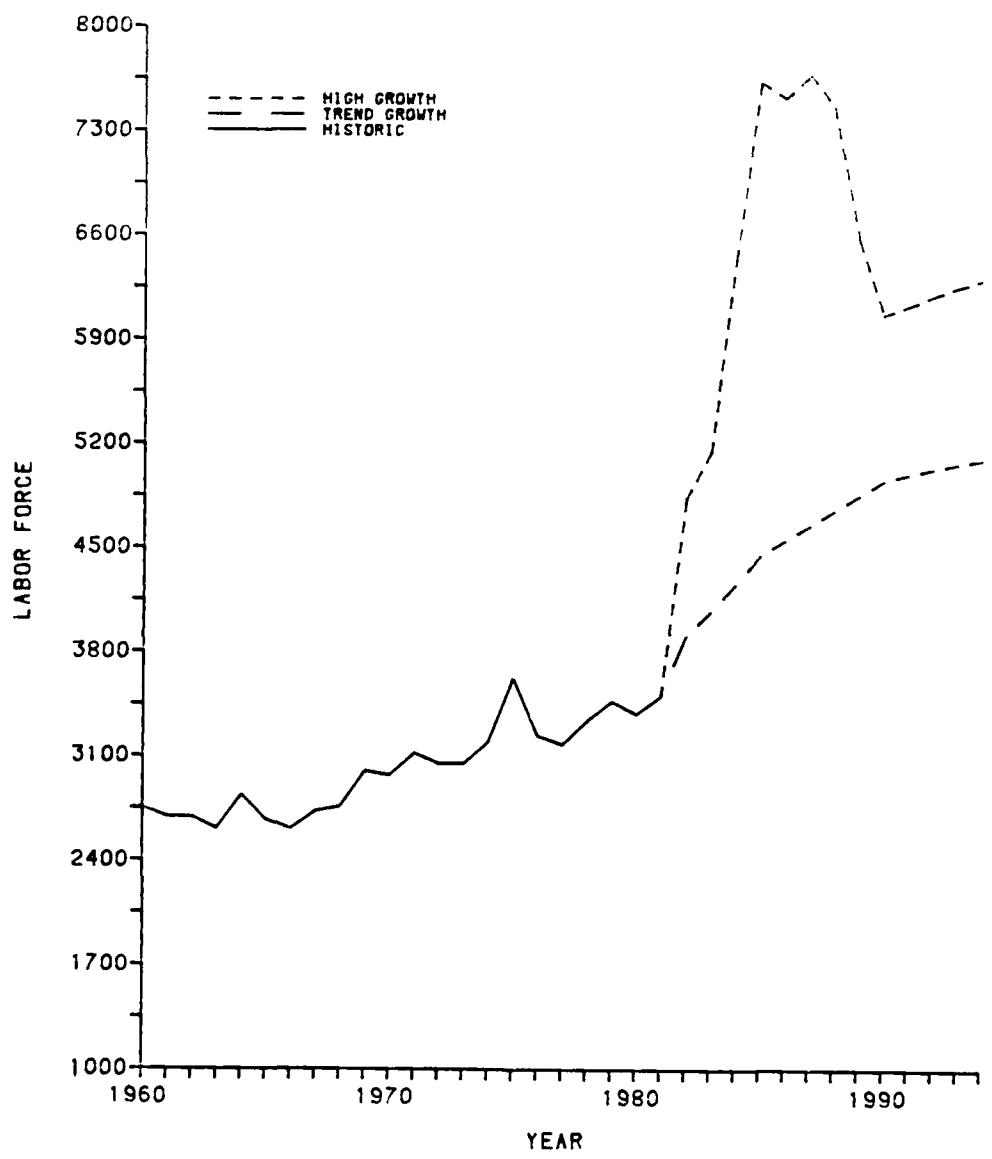


Figure 3.4.3.1-2. Historic and projected baseline labor force in Millard County.

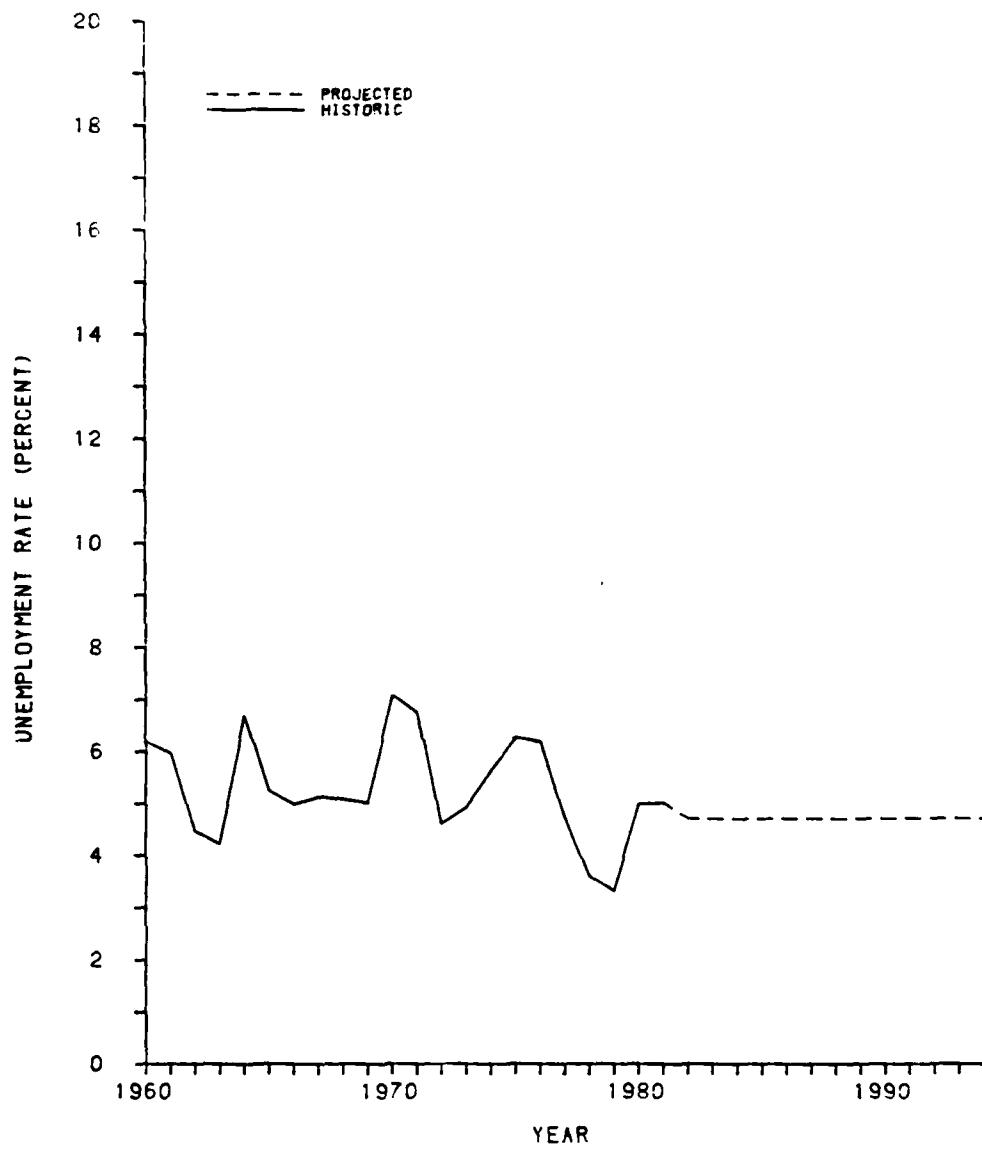


Figure 3.4.3.1-3. Historic and projected baseline rate of unemployment in Millard County.

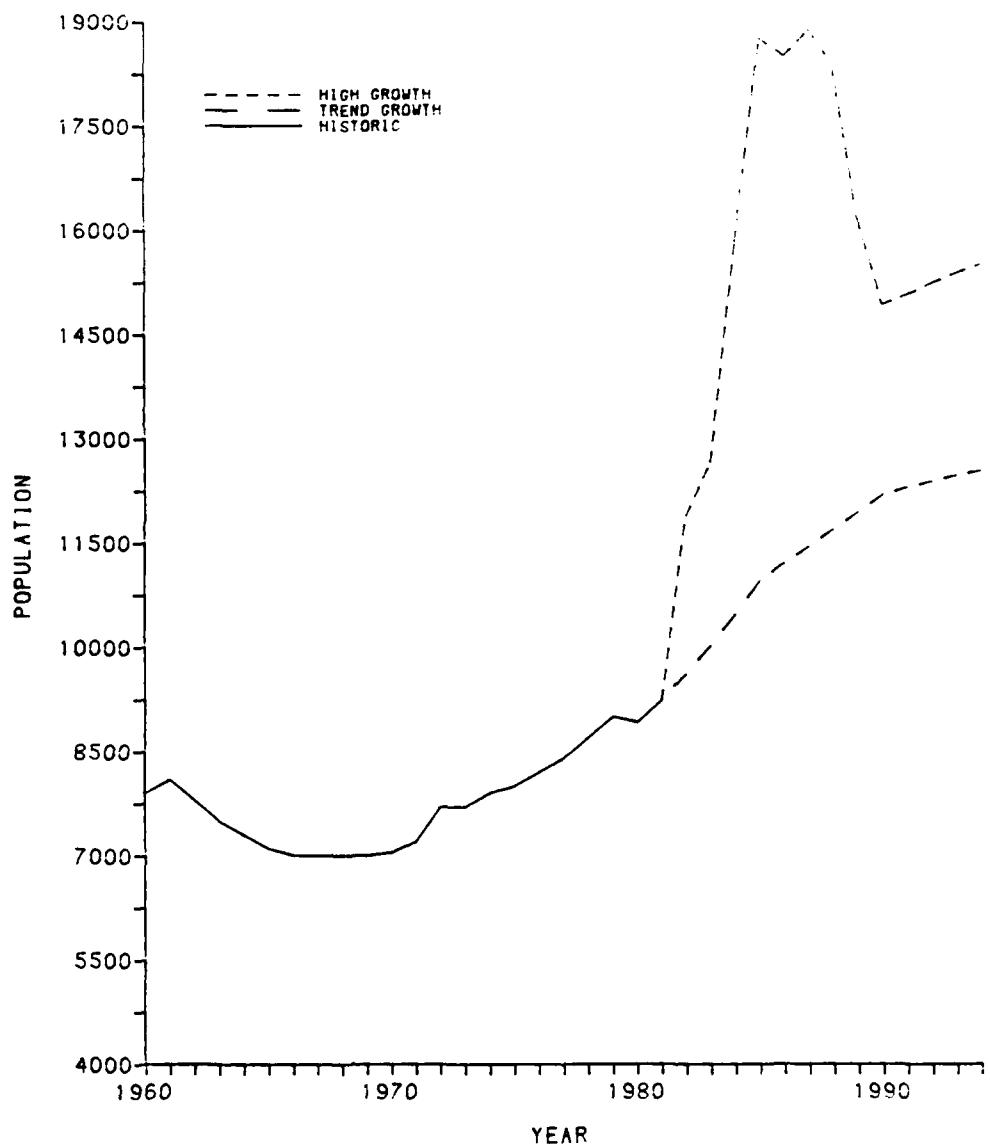


Figure 3.4.3.1-4. Historic and projected baseline population in Millard County.

receives an average of 7.16 in. of precipitation per year. This precipitation is evenly distributed throughout the year and is not considered an important factor in controlling dust.

Biological Resources (3.4.3.2.4)

Vegetation and Soils

The soils of the site are formed on lake plains and terraces with slopes generally 0 to 2 percent. Playas are found throughout the area. The soils are potentially arable if water becomes available for leaching and irrigation. At present, the water availability to plants is low due to the very high salt concentration. Several soil series are found in this region, but in the predominant series, permeability is very slow, runoff slow, and the hazard of erosion slight. In other areas, runoff erosion is moderate. Engineering properties of the soils are a high potential frost action, low to medium shear strength, and medium compressibility.

The potential OB site in the Delta area includes grassland, shadscale scrub, and alkali sink scrub vegetation-types (Figure 3.4.3.2-1). The site is located west of the town of Delta, on the floor of the Sevier Desert. The vegetation types found in the Sevier Desert watershed boundary include those listed above and Great Basin sagebrush, riparian woodland, pinyon-juniper woodland, some agricultural areals, and grassland.

Shadscale is the major vegetation type occurring in the Bonneville Basin area of Utah, which includes the OB site. The typical species are shadscale (Atriplex confertifolia), bud sage (Artemisia spinescens), and sticky-leaved rabbitbrush (Chrysothamnus viscidiflorus). Another vegetation type is alkali sink scrub. The characteristic species of this vegetation type are greasewood (Sarcobatus vermiculatus), and green molly (Kochia americana).

Alkali sink scrub and shadscale are the predominant vegetation types in the Sevier Desert watershed. These two vegetation types form a mosaic pattern across most of the valley bottom area. Shadscale scrub occurs in several different subtypes, including pure stands of winterfat and shadscale.

Grassland areas occur in the Sevier Desert watershed, including the area surrounding Carr Lake, near Beaver River east of the Cricket mountains, and near White Sage Flats, southwest of the town of Kanosh.

Great Basin sagebrush occurs in the south-central portion of the watershed, on Tabernacle Hill on the old lava flow area which is to the north of Tabernacle Hill, in the Cricket and Swasey mountains in the west, and in the northern section of the watershed. It is dominated by several sagebrush species (Artemisia tridentata, A. nova, and A. arborescens), sticky-leaved rabbitbrush (Chrysothamnus viscidiflorus) and Mormon tea (Ephedra viridis).

The Sevier River contains surface water year-round, and riparian vegetation occurs along the banks in some areas. Cottonwoods (Populus fremontii), willows (Salix spp.), and possibly tamarisk (Tamarix sp.) are the major trees associated with river areas.

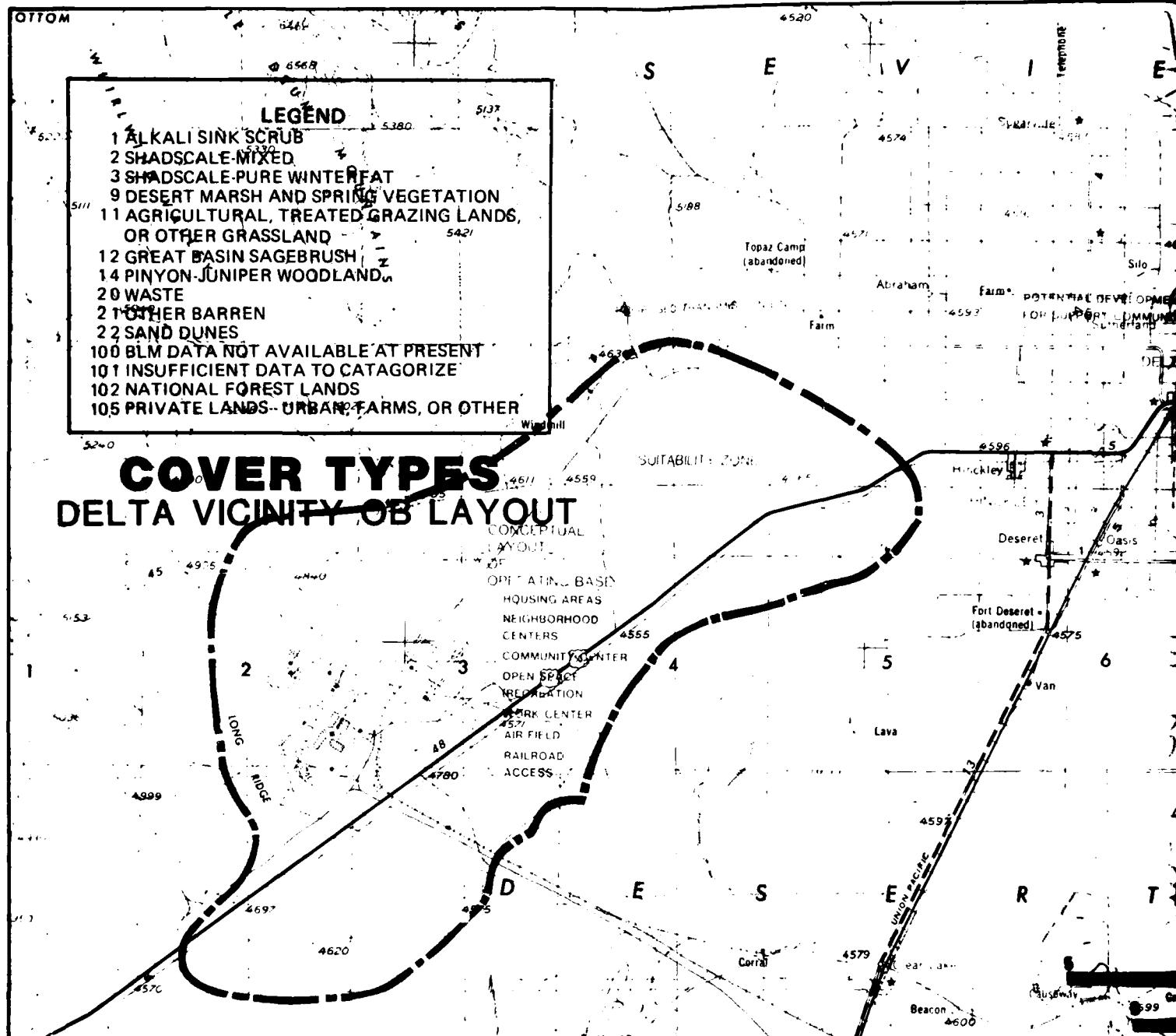


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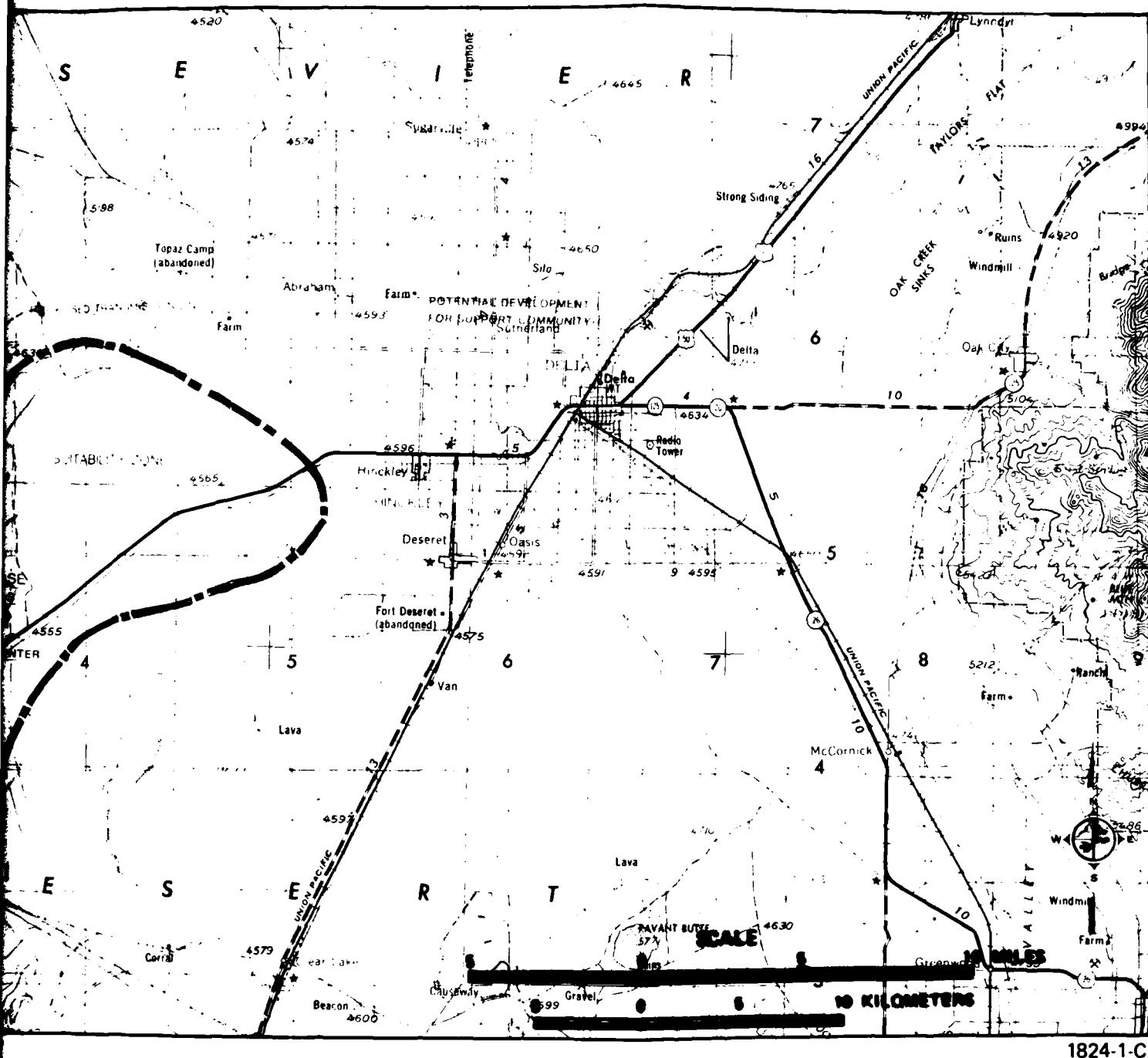


Figure 3.4.3.2-1 Vegetation cover types in the vicinity of Delta

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Pinyon-juniper woodland occurs in the mountains and high bajadas above the 5,500 ft elevation level. The community is dominated by Utah juniper (Juniperus osteosperma) and pinyon pine (Pinus monophylla). The understory often consists of shrubs such as big sagebrush and antelope brush (Purshia tridentata).

Wildlife

Mule deer are found in the Drum and Little Drum Mountains, to the west in the House Range, and to the south in the Cricket Mountains. Pronghorn antelope occur throughout much of the Sevier Desert and directly in the OB area. Waterfowl are located at the Topaz State Waterfowl Management Area approximately 20 mi northeast and at Clear Lake State Waterfowl Management Area, approximately 15 mi to the southeast.

Aquatic Species

Gunnison Bend Reservoir and the Sevier River are aquatic habitats within the more urban area of Delta. Game fishing in these habitats are warmwater species. The Sevier River and short streams in canyon drainages of the Pavant and Canyon mountains southeast of Delta also contain game fish, principally trout.

Protected Species

No protected or proposed protected terrestrial animals are in the immediate vicinity. The federally protected bald eagle has been sighted throughout the Sevier Desert in winter. Many sightings have occurred 20 mi east of the proposed base site near Greenwood, Utah. Several bald eagles winter at Fish Springs National Wildlife Refuge, about 50 mi northwest of the proposed base site. Peregrine falcons may nest in the Canyon Mountains, 30 mi from the proposed site. The terrace buckwheat (Eriogonum natum) occurs about 10 mi from the candidate site. No protected aquatic biota occur within 20 mi of the candidate site (Figure 3.4.3.2-2).

Wilderness and Significant Natural Areas

Recommended/designated wilderness study areas and significant natural areas located within a 50 mi radius of Delta are listed in Table 3.4.3.2-1.

Human Environment (3.4.3.3)

Employment (3.4.3.3.1)

Tables 3.4.3.3-1 and 3.4.3.3-2 highlight detailed employment characteristics of Millard County. The former table indicates the relative dependence of the county's economy on only two sectors -- agriculture, comprising 31 percent of total employment in 1977, and government, the source of 21 percent of 1977 county employment. Other sectors, notably manufacturing and services, traditionally dominate a well-balanced economic base; in Millard County, both of these sectors had percent shares of total employment equal to only half of the state average and one-third of the national average 1977 employment share.

Table 3.4.3.3-2 presents 10-year employment growth figures and indicates that Millard County has grown at just about the same rate as the nation over the 1967-

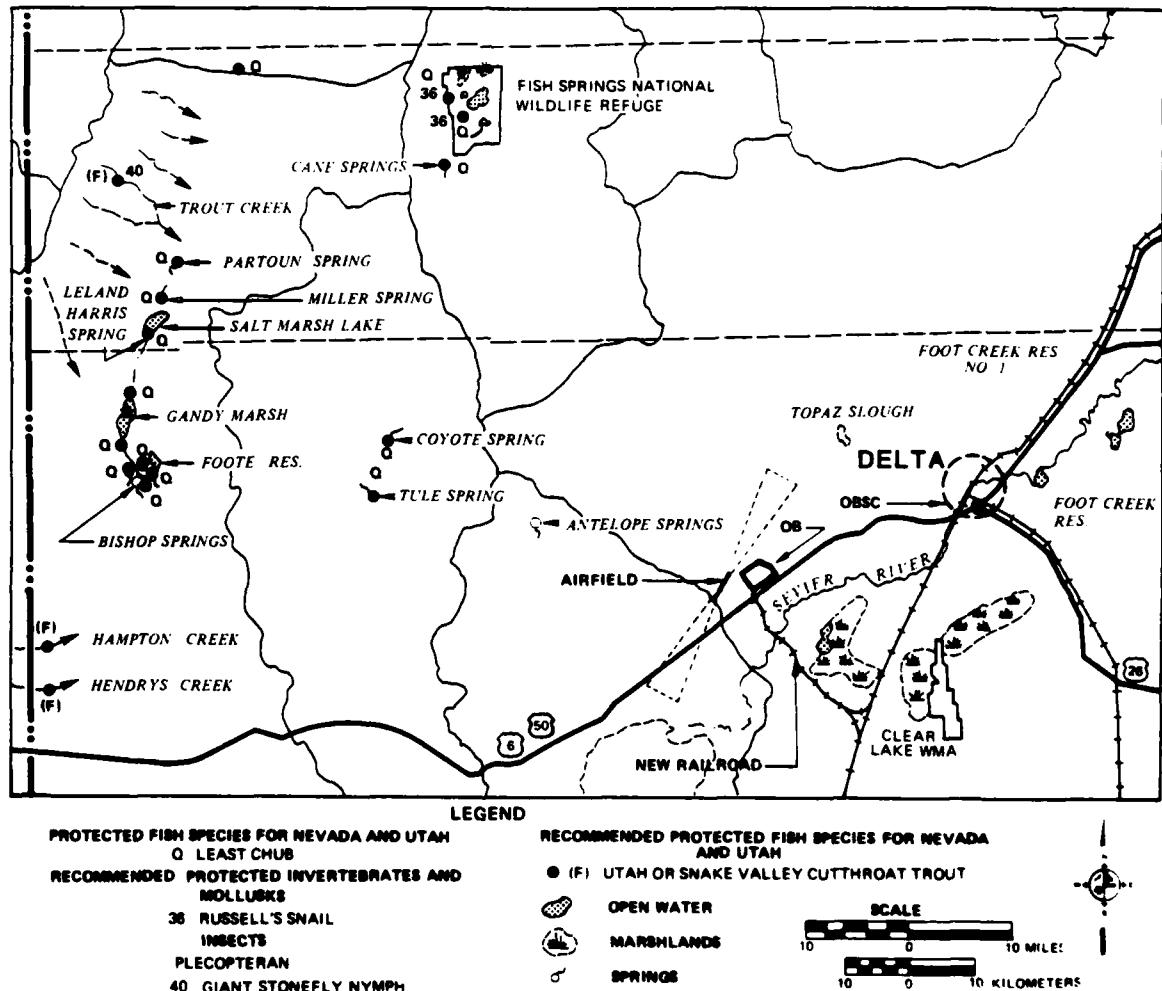


Figure 3.4.3.2-2. Locations of protected and recommended protected aquatic species near Delta.

Table 3.4.3.2-1. Potential wilderness and significant areas within a 50 mile radius of the Delta site.

POTENTIAL WILDERNESS AREAS	
AREA	MILES FROM OB SITE
1. Notch Peak	18
2. Howell Peak	21
3. King Top	50
4. Swasey Mountain	40
5. Fish Springs Range	37
6. Conger Mountain	40

SIGNIFICANT NATURAL AREAS	
AREA	MILES FROM OB SITE
1. Antelope Springs Trilobite Beds	13
2. Clear Lake Wildlife Management Area	20
3. Topaz Wildlife Management Area	10
4. Fumarole Butte	24
5. Deer Habitat Management Area	40

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Table 3.4.3-1. Total employment and percent share by major economic sectors for selected counties in Utah, 1977.

COUNTY	TOTAL EMPLOYMENT 1977	PERCENT OF TOTAL STATE EMPLOYMENT	AGRICULTURE SHARE (%)	MINING SHARE (%)	CONSTRUCTION SHARE (%)	MANUFACTURE SHARE (%)	SERVICES SHARE (%)	GOVERNMENT SHARE (%)
Beaver	1,726	0.3	18.2	1.3	2.6	8.6	(D)	20.4
Davis	50,061	9.1	2.2	0.1	4.6	9.3	9.2	51.1
Iron	6,517	1.2	9.4	3.9	5.0	6.2	9.8	26.7
Juab	2,150	0.4	13.2	(D)	(D)	25.8	7.3	20.7
Millard	3,416	0.6	30.9	1.8	1.2	6.8	6.4	21.4
Salt Lake	272,043	49.4	0.5	2.3	5.9	13.9	16.8	17.3
Tooele	10,959	2.0	3.1	0.6	10.0	9.7	4.5	57.1
Utah	59,393	10.8	4.6	7.0	6.1	20.0	20.6	16.6
Washington	6,365	1.2	6.9	0.4	7.0	7.9	11.9	21.4
Weber	49,011	8.9	2.3	0.1	4.8	11.4	14.5	30.2
Utah State Total	550,214		3.7	2.7	5.8	13.5	14.7	23.2
U.S.	97,898,874		4.2	4.2	4.0	20.1	17.4	18.2

(D) Not shown to avoid disclosure of confidential data.

Source: Bureau of Economic Analysis, April 1979.

Table 3.4.3.3-2. Employment growth by sector, selected counties in Utah, 1967-1977.

COUNTY	TOTAL		AGRICULTURE		MINING		CONSTRUCTION		MANUFACTURING		SERV/F'S		GOVERNMENT		
	1967	1977	A ¹	1967	1977	A	1967	1977	A	1967	1977	A	1967	1977	A
Beaver	1,625	1,726	0.6	340	312	-0.9	(D) ²	23	(D)	45	(D)	149	(D)	129	(D)
Davis	40,034	50,061	2.3	1,231	1,084	-1.3	49	14	-11.8	710	2,323	12.6	3,122	4,662	4.1
Iron	4,499	6,517	3.8	671	610	-0.9	244	255	0.4	176	327	6.4	270	405	4.1
Juab	2,116	2,150	0.2	343	284	-1.9	198	(D)	(D)	(D)	(D)	436	554	2.4	97
Millard	2,944	3,416	1.5	1,073	1,055	-0.2	(D)	62	(D)	52	42	-2.1	61	232	14.3
Salt Lake	180,651	172,043	4.2	1,604	1,443	-1.1	5,418	6,263	1.5	7,148	16,143	8.5	25,832	37,812	3.9
Tooele	11,514	10,959	-0.5	397	341	-0.2	136	70	-6.4	195	1,094	18.8	554	1,066	6.8
Utah	37,804	59,393	4.6	3,192	2,708	-1.6	225	417	6.4	1,543	3,620	8.9	8,317	11,899	3.6
Washington	3,950	6,165	4.9	579	442	-2.7	(D)	28	(D)	195	444	8.6	187	503	10.4
Weber	44,667	49,011	0.9	1,335	1,147	-1.5	17	49	11.2	1,523	2,344	4.4	4,855	5,590	1.4
State Total	391,289	550,214	3.5	23,091	20,244	-1.3	10,330	14,825	3.7	13,676	31,814	8.8	50,216	73,997	4.0
U.S. Total (in millions)	82.5	97.8	1.7	4.6	4.2	-1.2	.6	.8	3.0	3.3	3.9	1.6	19.5	19.7	0.1

¹A = Average annual growth rate.

²(D) = Not shown to avoid disclosure of confidential information.

Source: REA, April, 1979.

1977 period. Most sectors experienced relatively little change except for manufacturing which increased by about 14 percent per year.

The baseline labor force for Millard County is traced graphically from 1960-1994 in Figure 3.4.3.1-2. The amount of workers in the labor force has increased over the past two decades from 2,750 in 1960 to 3,388 in 1980. Labor force projections from 1980 to 1994 are dependent on the amount of growth that occurs within the county during that period. Two projections - high growth and trend growth - illustrate two distinctly different economic futures for the county. Trend growth assumes that no major projects will be undertaken in the county over the 1980-1994 period and projects that the labor force will increase to about 5,025 workers by 1994. High growth assumes that several major projects will induce additional workers into the county. With these other projects, the labor force is projected to climb above 7,600 workers between 1985 and 1987 and then decrease to about 6,000 in 1990. By 1994, 6,250 workers are projected to be available for employment in Millard County.

The baseline unemployment rate in Millard County is shown graphically from 1960 to 1994 in Figure 3.4.3.1-3. The rate has remained between 4 and 7 percent throughout most of the 1960-1980 period. In 1978 and 1979 it dropped to 3.0 and 3.3 percent, respectively. It is current 5 percent and is projected to decrease slightly to 4.6 percent in 1982 and remain at that level through 1994.

Income and Earnings (3.4.3.3.2)

Total earnings have exhibited little growth over the 1967-77 period. Table 3.4.3.3-3 highlights Millard County earnings by major industrial sector relative to other counties in Utah. It indicates that the county's 1977 total earnings of \$22.3 million were less than two-fifths of one percent of the state's total. Further, Millard County's earnings growth was 20 percent less than that for Utah over the 1967-1977 period. Disaggregating earnings by industry, the same pattern of negligible growth is observed except in the manufacturing sector where earnings nearly tripled over the 10-year period.

Table 3.4.3.3-4 highlights per capita income and earnings shares by major industry in Millard County. The county's 1977 per capita income of \$3,978 was roughly 67 percent that of Utah's and 57 percent of U.S. per capita income. By industrial source, government comprised 25 percent and agriculture 21 percent of 1977 total county earnings. Services, manufacturing and construction industries had earnings levels well below state and national averages, due mainly to relatively small employment levels in these sectors.

Public Finance (3.4.3.3.3)

Public finance units in the Delta and vicinity area include the county of Millard, the city of Delta, and the Millard County School District. The area's tax base represents a smaller than average county in Utah with \$35.3 million in Millard County and \$2.9 million in the city of Delta (Table 3.4.3.3-5). The revenue structure of the potentially affected government units reflects a dependence on intergovernmental revenue transfers. Intergovernmental revenues account for 62 percent and 63.2 percent of general-fund receipts in Delta and Millard County, respectively. These revenues are more than double the locally raised revenues (property tax,

Table 3.4.3.3-3. Utah earnings change by economic sector, 1967-1977 (in millions of 1977 dollars).

COUNTY	TOTAL EARNINGS		AGRICULTURE			MINING			CONSTRUCTION				
	1967	1977	GROWTH RATE	1967	1977	GROWTH RATE	1967	1977	GROWTH RATE	1967	1977	GROWTH RATE	
Beaver	13.26	13.9	0.5	2.5	.95	- 9.2	(D)	.48	(D)	(D)	1.1	(D)	
Davis	466.5	602.5	2.6	3.85	3.63	- 0.6	.72	.38	-6.2	11.4	39.6	13.2	
Iron	39.94	54.18	3.1	5.8	.96	-16.5	3.6	4.03	1.1	2.8	4.5	4.9	
Juab	15.96	14.33	-1.1	1.68	.83	-6.8	2.96	.2	-23.6	.36	.5	3.3	
Millard	18.43	22.3	1.9	5.8	4.65	-2.2	(D)	.97	(D)	.67	.81	1.9	
Salt Lake	1957.3	3108.3	4.7	9.29	7.31	-2.4	83.84	141.69	5.4	120.2	271.3	8.5	
Tooele	129.2	142.6	1.0	.65	1.78	10.6	1.4	.43	-14.0	3.1	21.12	21.0	
Utah	370.3	640.3	5.6	14.49	9.52	-4.1	3.7	.6	7.5	24.39	53.2	9.3	
Washington	28.36	49.96	5.8	3.25	2.35	-3.2	(D)	.	(D)	2.55	5.5	8.0	
Weber	432.1	492.9	1.3	6.74	2.37	-9.9	.1	1.27	28.9	26.30	36.8	3.4	
State	6010.5	4.2	119.2	82.4	-3.6	155.4	310.15	7.2	226.3	542.65	9.1		
U.S.	921,344	1,164,755	2.4	31,950.7	26,163	-2.0	9,715.6	10,115	.4	54,730.6	69,617	2.4	
MANUFACTURING													
COUNTY	1967	1977	GROWTH RATE	1967	1977	GROWTH RATE	1967	1977	GROWTH RATE	1967	1977	GROWTH RATE	
Beaver	(D)	.96	(D)	.94	.9	0.0	2.29	3.03	2.8				
Davis	43.68	69.88	4.8	20.04	48.38	9.2	343.5	349.67	0.2				
Iron	2.19	3.71	5.4	4.48	6.14	3.2	9.9	15.95	4.9				
Juab	4.53	5.16	1.3	.64	1.13	5.8	2.66	3.08	1.5				
Millard	.52	1.45	10.8	1.44	1.57	0.9	4.67	5.57	1.8				
Salt Lake	343.1	495.5	3.7	297.8	492.3	5.2	301.6	450.4	4.1				
Tooele	7.22	17.93	9.5	3.03	4.06	3.0	104.3	86.14	-1.9				
Utah	118.2	202.0	5.5	75.85	145.3	6.7	58.81	87.6	4.1				
Washington	1.44	5.39	14.1	3.83	7.23	6.6	7.47	11.47	4.1				
Weber	57.66	69.22	1.8	55.86	72.96	2.7	149.2	144.7	0.4				
State	657.7	1011.2	4.4	510.	856.5	5.3	1102.8	1119.8	2.0				
U.S.	269,026	305,747	1.3	135,753	191,246	1.6	151,707	199,470	2.8				

Table 3.4.3.3-4. Per capita income and earnings shares by economic sector, selected Utah counties, 1977.

COUNTY	1977 PER CAPITA INCOME	TOTAL 1977 EARNINGS (\$000s)	AGRI-CUL-TURE SHARE (%)	MIN-ING SHARE (%)	CON-STRUC-TION SHARE (%)	MANU-FACT-URING SHARE (%)	SERV-ICES SHARE (%)	GOVERN-MENT SHARE (%)
Beaver	\$5,114	\$ 13,900	6.9	3.4	8.2	6.9	5.8	21.8
Davis	5,860	602,505	0.6	0.1	6.6	11.6	8.0	58.0
Iron	4,693	54,175	1.8	7.4	8.4	6.8	11.3	29.4
Juab	3,797	14,328	5.8	4.9	2.8	36.0	7.9	21.5
Millard	3,978	22,296	20.8	4.3	3.6	6.5	7.0	25.0
Salt Lake	6,712	3,108,320	0.2	4.6	8.7	15.9	15.8	14.7
Tooele	5,684	142,636	1.2	0.3	14.8	12.6	2.8	60.4
Utah	4,854	640,317	1.5	1.0	9.2	31.5	22.7	13.7
Washington	4,381	49,961	4.7	0.8	11.0	10.8	14.5	22.9
Weber	6,158	492,894	0.5	0.3	7.5	14.0	14.8	31.4
State	\$5,943	\$6,010,516	1.4	5.2	9.0	16.8	14.2	22.3
United States	\$7,026	\$1,164,755 ¹	2.2	1.6	6.0	26.2	16.6	17.1

¹ (\$millions)

575

Source: BEA, 1979.

Table 3.4.3.3-5. Assessed valuation, indebtedness limitation and reverse bonding capacities, 1979.

JURISDICTION	ASSESSED VALUE	INDEBTEDNESS LIMITATION	OUTSTANDING G.O. BONDS	RESERVE BONDING CAPACITY
Millard County	\$35,251,922	\$2,820,153	0	\$2,820,153
School Dist.*	33,111,959	5,297,913	\$3,258,000	2,039,913
Delta City	2,993,687	478,989	478,989	0

1051

*School year 1978-79.

Source: Statistical Review of Government in Utah, Utah Foundation, 1979

Utah, County Economic Facts, Utah Industrial Development Informational System, 1979

licenses and permits, fines and fees), in both jurisdictions (County of Millard Statement of General Fund Revenues and Expenditures, 1976-1977; City of Delta Statement of General Fund Revenues and Expenditures, 1976-1977).

Expenditure patterns differ between Millard County and Delta, principally due to public works' expenditures in county budgets being transferred in from the special revenues road fund, resulting in a shifting of expenditure patterns within the general fund. Similarities do exist, however, in the public works fund for both jurisdictions, which represents an average of 33 percent of total general-fund appropriations for Millard County and Delta. Delta additionally disburses another 34 percent on public safety, while Millard County contributes only 16 percent (netting out public works and averaging for 1977 and 1978). Millard County's budget is 10 times that of the City of Delta.

Due to the relative size of Delta's budget, general-fund revenues are first disbursed for necessary public services. As such, public safety and public works expenditures are considerably higher in percentage terms than Millard County's respective expenses.

Instruction expenses are the largest single outlay, approximately 59 percent, of total school expenditures, excluding capital outlay and debt service. Fixed charges (insurance, pension payments) and operation and maintenance of the physical plant account for another 30 percent of expenditures. Revenues for the Millard County School District are dependent on state contributions, which account for over 60 percent of maintenance and operating fund revenues. Local contributions account for 33.7 percent of the school district's revenue.

Local governments in the Delta vicinity have less than adequate fiscal structures to support growth above low to moderate levels. Due to the less than average tax base of the governmental units, indebtedness levels are extremely low to support long-term financing of major capital improvement projects. Reserve bonding capacity for Millard County is satisfactory, while the school district and city of Delta have capacities of 38 percent and 0 percent, respectively.

Population (3.4.3.3.4)

Delta, the largest incorporated city in Millard County, is located in the northeast part of the county. Fillmore, a smaller community that is the county seat of Millard County, is located about 35 mi southeast of Delta. Nearly 50 percent of the population is scattered throughout communities located north and south of Fillmore, and areas around Delta. These communities include Hinckley, Holden, Kanosh, Leamington, Lynndyl, Meadow, Oak City, and Scipio.

The population of Delta and Fillmore declined in the 1960s, but has increased in the 1970s. A 1977 estimate of 4,220 for these two communities combined shows a substantial increase of over 1,000 from the 1970 figure. The county's population increased from 6,988 in 1970 to about 8,300 in 1977, and is entirely rural. Nearly 40 percent of the population is under 25 years old, and 9 percent are over the age of 70.

Housing (3.4.3.3.5)

Over the last two decades, Millard County has had a mixed experience in housing growth. From 1960 to 1970 the number of housing units declined slightly

from 2,417 to 2,412 units. In the next six years, however, the trend reversed and housing supply grew by 4.3 percent annually, so that by 1976 an additional 694 units increased the stock to 3,106 units. The proportion of the county's housing stock in single family units decreased slightly from 94 percent in 1970 to 88 percent in 1976, while the share of multi-family units and mobile homes increased from 6 to 12 percent over the same period.

It is estimated from annual permits authorizing residential construction that over the 1970 to 1979 period, an average of 30 permanent housing units were added each year, with a maximum annual production of 56 units in 1978. In 1976, there were approximately 350 mobile homes in Millard County, constituting an 11 percent share of the housing units. In 1970, about 85 percent of the housing units were owner-occupied.

Community Infrastructure (3.4.3.3.6)

Organization

Millard County is part of the six-county central Utah region which administers many state and federal assistance programs. These programs include aging, community and natural resource planning, economic development administration, human services, law enforcement planning, and manpower programs. A county Council of Governments helps public officials to work together to overcome local problems and constraints.

Education

The Millard County School District, with a 1980 enrollment of 2,176 pupils, operates three elementary schools, one junior high, and two senior high schools. Approximately 90 teachers are employed by the school district. Enrollment levels have remained fairly constant, with a slight decrease in total enrollments since 1974. The capacity of the school system is almost completely utilized in most grade levels, with several portable classrooms already being used to accommodate some students. However, approximately 250 additional students can be accommodated with the present facilities.

Health Care

Hospital facilities are available in Delta and Fillmore, with 18 long-term nursing beds and 22 acute care beds, respectively. Health care providers include five physicians, seven registered nurses, six licensed practical nurses, four dentists, and two mental health workers.

Police Protection

The Delta municipal police department has three police officers, while Millard County has one sheriff and three deputies aided by six Utah Highway Patrolmen.

Fire Protection

Fire protection services are available in Delta and Fillmore. Fillmore, which has a fire insurance rating of 7, has a volunteer company consisting of approxima-

tely 30 personnel using a 500-gallon pumper, a 750-gallon pumper, and a 1,000-gallon pumper.

In Delta, 25 volunteers maintain a 500-gallon pumper, 750-gallon pumper, and 250-gallon pumper.

Water Supply and Distribution

Delta has water rights for 1,910 gpm and acquires its water from three wells. Water use averages 238 gpcd and peaks at about 520 gpcd. Average use is nearly 0.5 MGD for the city. Storage capacity, 0.6 MG in two steel tanks, is 65 percent of ideal storage standards including 300,000 gallons for a two hour fire flow. Each storage reservoir is served by a 10 in. main. The Delta water system has sufficient capacity in all respects for current requirements except for storage. However, should demand increase beyond present supply capacity, arrangements for additional water rights will require some study since the Delta groundwater basin is now overappropriated. The population of Delta City is projected to be 2,800 persons by 1987 from normal growth and is projected to increase to 5,300 persons if the Intermountain Power Project goes ahead as planned.

Wastewater Collection and Treatment

The wastewater collection system in Delta consists of vitrified clay pipe, some oakum and some open joints, asbestos concrete pipe, and PVC pipe. The system consists of about 8.5 mi of pipe and 90 manholes, with no storm drain connections to the system. Approximately 775 connections to the system generate an average daily flow of 0.4 MGD. The wastewater treatment facility at Delta was constructed in 1971, and consists of a 6-cell stabilization lagoon. The facility was designed for a population of 3,500 persons plus an additional BOD load of 200 pounds from industry and has a current capacity of 0.5 MGD. Present domestic flow load factors are 150 gpcd and 0.17 pounds BOD. The system will detain an average daily flow of 0.525 MGD for 150 days before discharge is necessary. Through 1979, only cells 1, 2 and 3 have approached capacity and the system has operated as a complete containment lagoon without discharge. The wastewater collection system is adequate for current conditions and can sustain additional growth of more than 100 connections, while treatment facilities could sustain an additional 3,000 residents.

Solid Waste

Solid waste disposal facilities in Delta and vicinity are comprised of two sanitary landfills with a total area of 50 acres, 10 in Delta and the remainder in Fillmore, 30 mi southeast. The combined excess capacity is approximately 34.5 acres, which is sufficient to serve the existing population through 1993.

Parks and Recreation

Both Delta and Fillmore provide parks and outdoor swimming pools. Millard County contains several major outdoor recreational facilities, including Territorial Statehouse, a Utah Division of Parks and Recreation facility. In addition, numerous recreation sites are within an assumed 50 mi sphere of influence of Delta.

Parklands. All of the parklands within easy access of the Delta/Fillmore area are to the east in the Pavano Range and Wasatch Plateau. The National Forest

Service and Utah Division of Parks and Recreation administer the vast majority of these parklands. Portions of the Fishlake, Uintah and Wasatch National Forests are just to the east of the Delta/Fillmore area.

Three campgrounds and one snowplay and snowmobile area (Salena Canyon and Skyline Drive) are accessible to Fillmore and Delta communities respectively. Four campgrounds in Fishlake National Forest and two campgrounds administered by the BLM are within easy access of both Fillmore and Delta. In addition to camping facilities, the Little Sahara Recreation Area (BLM) provides opportunities for dunebuggy and motorcycle riding and racing (Table 3.4.3.3-6).

There is one state recreation area, Yuba Lake, within the 50 mi "sphere of influence" (50 mi from Delta and 40 mi from Fillmore). This is the only water-based recreation site in the area. Camping (18 camps), boating (ramp), swimming (0.6 acres of beach), waterskiing (4,500 acres of water) and snowmobile areas are the types of recreational activities available (UORA, 1976).

Snow Related Recreational Facilities. Except for the three acres of snow play and snowmobile trails identified, Yuba Lake, Salina valley and Skyline Drive, there are very few developed snow-related recreation sites in the area. The nearest ski resort is Mt. Holley to the south, approximately 70 mi from Fillmore. A number of ski resorts and other snow-based recreation sites are located in the Wasatch Range east of Provo and Salt Lake City north of the proposed OB deployment area.

Water Related Recreation Facilities. As noted above, there is one water based recreation site, Yuba Lake, within 50 mi of Delta/Fillmore. Further north, a number of developed water-based recreation sites are around Utah Lake and the Great Salt Lake. River rafting, kayaking and/or canoeing may be enjoyed on some of the larger mountain creeks and the Sevier and Beaver Rivers during portions of the year.

ORV and Other Forms of Dispersed Recreation. The largest developed ORV park in this region is the Little Sahara Recreation Area of the BLM, with 61 sq mi. Dunebuggy and motorcross enthusiasts typically come from as far away as Salt Lake City to enjoy this area. This area is also the site of the Cherry Creek national motorcycle races. The use of ORVs in recreational pursuits occur throughout the entire region (BLM, 1980) however, the most concentrated use is presently in and around the Little Sahara Complex, Little Valley near Yuba State Recreation Area and Whirlwind Valley.

Vehicle use to engage in other recreational pursuits such as rockhounding, driving for pleasure or hunting may be expected to increase on the BLM lands east of Delta and Fillmore. The House Range and Keg Mountains already receive a good deal of this type of activity (BLM, 1980).

Quality of Life (3.4.3.3.7)

Delta is a small community located in a cluster of small towns which are primarily agricultural. Delta is the center for alfalfa seed production in the state and is dependent on irrigation from the Sevier River. Millard County population was once slowly declining, but from 1970 to 1977 the county population grew at a rate of 2.5 percent per year.

Table 3.4.3.3-6. Developed recreation sites on federal lands in the vicinity of Delta/Fillmore.

SITE NAME	ACTIVITIES	UNITS	MILES FROM DELTA/FILLMORE
Fishlake National Forest Gooseberry	Camping Fishing Hunting	4 camps — —	-/50+
Castle Rock	Camping Fishing	9 camps —	-/40
Shell Oil Site	Camping Fishing	3 camps —	-/15
Uintah National Forest Little Valley	Camping Fishing Hunting	7 camps — —	50+/-
Little Cottonwood	Camping Fishing Hunting	3 camps — —	50+/-
Ponderosa	Camping Fishing Hunting	28 camps — —	50+/-
Chicken Creek	Camping Fishing Hunting	11 camps — —	50+/50+
Fishlake National Forest Maple Grove	Camping Fishing Hunting	9 camps — —	50+/40
Maple Hollow	Camping Hunting	14 camps —	35/15
Oak Creek	Camping Hunting Fishing	13 camps — —	20/40
BLM Maple Creek	Camping	n.g. ²	35/15
Little Saharah Recreation Area	Camping Dune Bug & ORV Rec.	n.g. ¹ 6 sq. mi.	35/50+

3806

¹Utah Travel Council

²n.g. * none given

Per capita income and wages are low for the state. Residents have a strong attachment to their community as home. Area residents view their community very favorably. However, the advantages (access to outdoors, air quality, and community spirit) were balanced against poor appearance and the difficulty of earning a living. The local population supports economic growth.

The number of law enforcement officials per 1,000 population is well below state and national averages. Violent crimes and crimes against property occur at exceptionally low rates, 1.5/1,000 population and 21.1/1,000 population, respectively. County residents display a high degree of concern about law enforcement.

Indicators of social disorganization correlate positively with crime rate data, as Millard County shows very low rates of divorce, suicide, and alcoholism. Alcoholism rates are estimated at 19.3/1,000 population, close to state mean, but less than half the national rate. Divorces occur at an exceptionally low rate, 1.7/1,000 population, one third the state divorce rate of 5.1/1,000 population. The quality of religious life, programs for aged, schools, and effectiveness of local government are given exceptional ratings in terms of their adequacy and availability. These social and political services provide a high degree of integration and cohesion within the community. On the other hand, these amenities are partially offset by the feeling that facilities for youth, shopping, cultural activities, restaurants, and entertainment need improvement. Schools are evaluated by local residents as exceptional.

Outdoor recreation is available throughout the county on the large BLM landholdings and in Forest Service land along the eastern side of the county. Parks and playgrounds are evaluated as satisfactory by residents of the county, with some communities appearing to have better facilities than others. Access to the outdoors is viewed as exceptional in the area.

In summary, the Delta region presents itself as an area with a high quality physical and social environment. It has experienced a slow pace of growth and social change. Its citizens are satisfied with their way of life and are favorably disposed to moderate growth.

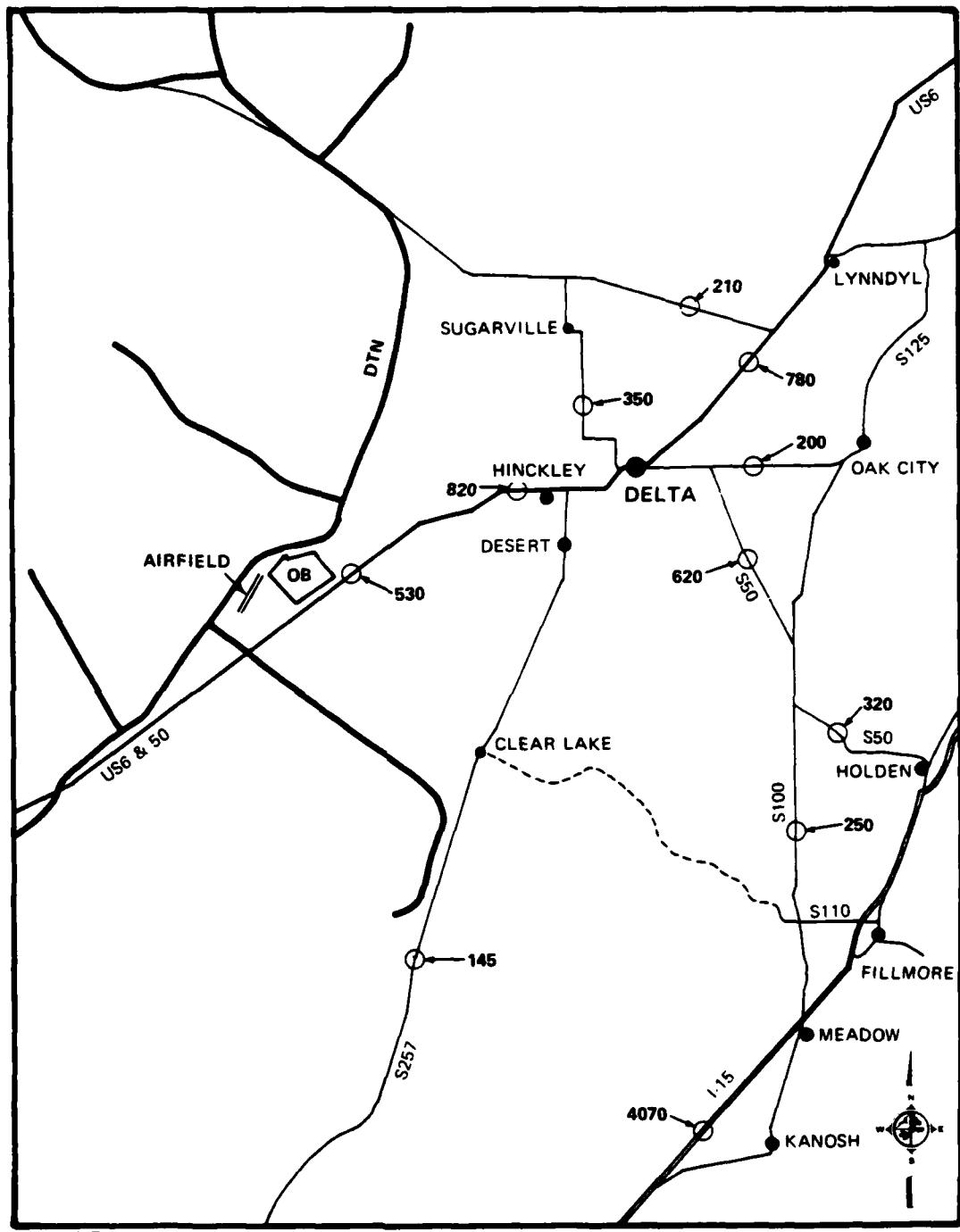
Traffic and Transportation (3.4.3.3.8)

The proposed operating base site is approximately 20 mi west of Delta, Utah, along U.S. 50. A map of the existing road network around Delta is shown in Figure 3.4.3.3-1 Major roadways in the area are U.S. Highway 6 and 50, State Routes 50, 100, and 257, and Interstate Highway 15. Traffic volumes for 1978 are also shown for major routes in the area.

Delta is served by the Union Pacific Railroad which connects Salt Lake City, Utah and Las Vegas, Nevada. Limited commercial airline service is available at Delta.

Energy (3.4.3.3.9)

Delta has no natural gas service. Although no plans exist for extension of service to the area, if such service were to be provided the supplier would be Mountain Fuel Supply (MFS), Salt Lake City. Pacific Gas Transmission (PGT), a



LEGEND 000 - 1978 TRAFFIC VOLUMES; DELTA, UTAH

SCHEMATIC : NOT TO SCALE 2182-A

SOURCE: UTAH DEPARTMENT OF TRANSPORTATION

Figure 3.4.3.3-1. Existing traffic volumes in the vicinity of Delta.

Delta

subsidiary of Pacific Gas and Electric, San Francisco, has proposed to build a 30-in. high pressure gas transmission line from Kemmerer, Wyoming, and Bonanza, Utah, joining east of Provo, Utah, near Strawberry Reservoir, and continuing along Interstate 15 through Cedar City, Utah, and Las Vegas, Nevada, to southern California. Delta is located approximately 26 mi west of the proposed pipeline route.

Home energy requirements are supplied by bottled gas, fuel oil and electricity. The fuels are trucked in from Las Vegas, Nevada, and Salt Lake City, Utah.

Electrical energy to Delta is supplied by Utah Power and Light Company via two 46 KV subtransmission lines.

Land Ownership (3.4.3.3.10)

The proposed OB complex is located southwest of Delta in an area under the control of the Bureau of Land Management. Within a 5 mi radius of the OB, 83 percent of the land is federally owned, but there are eight separate sections of state land, and two larger parcels of state land, totaling approximately 8,000 acres within this area, along with some 640 acres of private land 2 to 3 mi northeast of the proposed OB site.

Land Use (3.4.3.3.11)

Oil/gas leases are present in concentrations west of the Delta OB. The already approved and funded Intermountain Power Project will interact with the socioeconomic impacts of M-X basing at Delta. The Corps of Engineers map, prepared on the basis of BLM computer printouts, shows a block of unpatented mining claims 10 mi to the northwest of Delta. An established recreation area, Little Sahara, is near the proposed base. The base includes 4 mi² of private land.

Agriculture

No irrigated cropland is located in the vicinity of the proposed OB complex. The land in this area is used mainly for BLM administered grazing. The OB site facilities are located in the Topaz Planning Unit where the BLM permits 29.2 acres per AUM for a total grazing authorization of 74,105 AUMs.

Recreation

No fishing or concentrated recreation sites are located in the vicinity of the OB site. Because this area is mostly under public ownership, it is used for dispersed recreation, small-game hunting, collecting activities, and off-road vehicle use.

Mining

No mining sites are located on land designated for the proposed OB.

Land Use Plans

Delta is located within the Central Utah Planning District. The Six County Commissioner's Organization provides overall guidance to local planning activities.

One of the endeavors is the Six County Development Plan, prepared in 1977. A master plan has never been developed for Millard County nor any of the communities therein, although the plan identified land use patterns in Millard County and its communities.

Fillmore is the county seat of Millard County. Fillmore developed an industrial park of some 370 acres several years ago and has been successful in bringing some industrial development into the area.

Delta is located in the area being considered for most development in the county. Being the largest town in the valley, Delta would become the natural center for most activities and developments proposed nearby. While slightly larger than Fillmore in total population, Delta is still a small, rural community in terms of land use. At present only about 307 acres are devoted to residential use, while 343 acres are still used for agriculture. Commercial development accounts for only 23.5 acres and industrial development for only about 9 additional acres. The large, wide streets use up 115 acres of the total land area of the city, which is only 838.4 acres at the present time.

Because of the agricultural nature of Millard County and particularly because of the extensive farming area around the Delta, it is likely that Millard County has the highest utilization rate of private land of any Utah county being considered for base location. The total amount of agricultural land is 455,948 acres.

Zoning

Implementing ordinances, zoning, and subdivision ordinances are nonexistent in the county and its towns. Historically, growth has been very slow in Millard County and has required very little control or supervision.

Native Americans (3.4.3.3.12)

The Delta area has potential cultural significance for three Utah Indian tribal groups: the Goshute Shoshone, Western Ute, and Southern Paiute. Portions of the Sevier Desert north and west of the Delta area lie in the southeastern territory of the Goshutes, who reside at the Skull Valley and Goshute reservations. The extent of Goshute cultural resources in this area has not yet been determined. Two branches of Western Utes, the Timpanogots and Pahvants, inhabited the Sevier Desert unit from prehistoric times until the 1850s. Timpanogots' villages are documented in Tintic Valley during the 19th century. The Pahvant inhabited permanent settlements on the Sevier River, Beaver River, and on the adjacent flank of the Pahvant Mountains. Winter villages corresponding to major Pahvant divisions were located at Lynndyl, Deseret, Black Rock, Kanosh, Holden, and Scipio.

Contemporary Southern Paiutes moved into the Sevier Desert basin after the emigration of the Utes to the Uintah Reservation in the 1850s and are now dominant in the area.

The Sevier Desert contains 23 recorded aboriginal habitation sites, and 54 springs. An intensive survey of this large area has not been conducted. Rock art sites are documented for the Sheeprock and Simpson Mountains in the northern portion of the unit, and for lava flow areas south of Delta. In addition, burial grounds occur in the Pahvant and Canyon Ranges east of Delta.

There are no reservation lands or Native American communities in the area. The Delta area has potential cultural significance to the Ute, Southern Paiute, and Goshute Shoshone. Pahvant Ute cultural remains in the area are extensive, from the Sevier Desert to areas north and west of Shoshone. Site-specific data on Native American cultural resources and socio-economic environment are being gathered at the Kanosh, Cedar City and Richfield Indian Colonies and at the Skull Valley and Goshute Reservations.

Archaeological and Historical Resources (3.4.3.3.13)

There are no recorded archaeological or historical sites in the vicinity. However, the proximity of the Sevier River located to the east of the OB suggests that the potential for cultural resources in this area is high. Scattered finds of fluted projectile points along the Sevier River attest to the possible presence of early man in this region. In addition, high potential exists for the occurrence of archaeological and historic sites eligible for the National Register of Historic Places. Early-man sites are known in the vicinity along the Sevier River, and Fremont sites are known in the general area. Within a 20 mi radius of the proposed site, approximately 30 percent of the land is predicted to have significant quantities of historical resources.

Paleontology

The OB siting area is located on alluvial valleyfill in an area that at one time was inundated by Lake Bonneville. Lake Bonneville was a large lake that covered much of the Utah Basin and Range during the late Pleistocene, up to about 10,000 years ago. Important vertebrate fossils have been found in scattered locations in the Bonneville sediments.



Ely

ELY (3.4.4)

Introduction (3.4.4.1)

The area of analysis (AOA) for the Ely operating base option includes White Pine County. The AOA is located in the north central section of the designated region of influence (ROI) as shown in Figure 3.4.4.1-1. Ely, McGill, and Ruth are the major settlements in the AOA. This section and Chapter 4 detail important environmental characteristics of Ely and vicinity and the proposed base site, respectively.

Once a part of Lander County, White Pine County was organized separately on April 1, 1869. This was a result of the rapid population growth in the Hamilton area due to a rich mining discovery on Treasure Hill. Hamilton became the county seat in the same year, but by 1885, the town had declined to the point where the county seat was moved to Ely. This decline resulted from the mine becoming uneconomical to work--the eventual fate of several other towns in the county.

Around 1906, the Kennecott Copper Corporation began mining operations in Ely and has since been the major supporting industry for Ely, McGill, and Ruth. Until recently, Ely was one of the largest copper producing areas in the country.

Although the tourist-related sector is the most important as regards personal income in the state of Nevada, it is the mining and related manufacturing sector which is of primary importance in White Pine County. While White Pine County contributes only about 1 percent to total state income, it was the source of over 20 percent of income produced from the mining sector statewide. This income originates from the copper mining industry of which the Kennecott Copper Corporation is the major producer in White Pine County.

Other Projects

While economic growth has been relatively slow, expansion of mineral production and the development of energy resources are forecast for the county in the near future. The Kennecott Copper Company's mine near Ruth and metal processing in McGill are expected to slowly build employment levels in the county, beginning in 1980. The second major project forecast--the White Pine Power Project (WPPP)--includes the construction and operation of a 1,350 MW coal-fired power plant, scheduled to begin in 1984. If realized, cumulative effects of these two projects will peak in 1987, generating an expected 4,353 new jobs. This growth would be roughly 180 percent of total county employment of 3,952 jobs in 1977 (Table 3.4.4.3-1). In the long-run, well over 2,000 jobs would be created on an annual basis. In addition, although not included in baseline employment projections used in this study, a major new electronics manufacturing facility is under construction near Ely. The Lynch Communication Systems' operation is expected to employ 100 people by late 1981, and 500 by 1990 (Bourne, White Pine County, 1980).

Table 3.4.4.1-1 presents employment projections over the period 1980-1994 for White Pine County. These forecasts have been separated into Baseline 1 and Baseline 2. The first set of projections are essentially an extrapolation of 1967-1978 growth trends in White Pine County. Baseline 2 includes Baseline 1 growth plus WPPP and expansion of Kennecott Copper Company operations. These projections

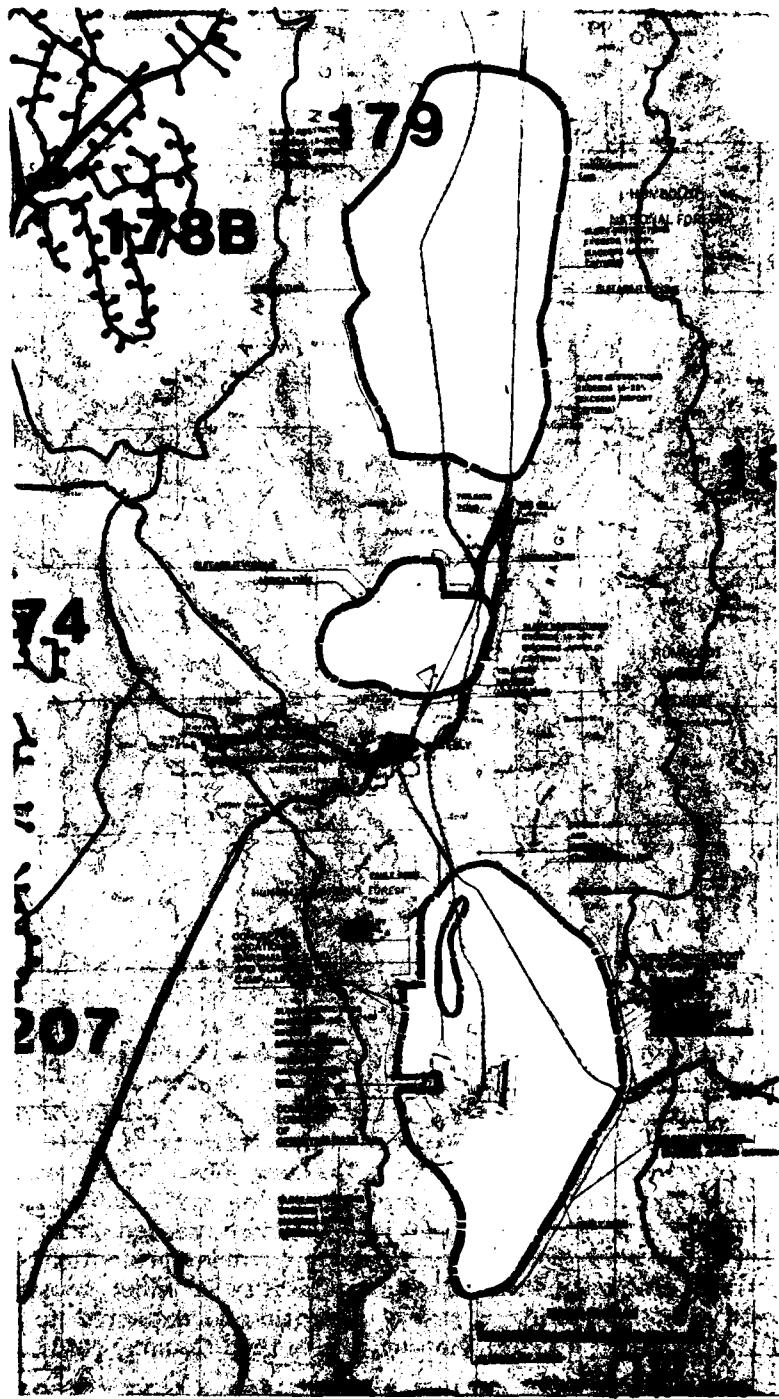


Figure 3.4.4.1-1. Area of Analysis (AOA) for the Ely vicinity.

Table 3.4.4.1-1. Projected employment by major industrial sector, White Pine County, 1994.

WHITE PINE COUNTY		1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Baseline 1																
Agriculture	187	187	187	188	188	188	188	189	189	189	190	190	190	190	191	
Mining	156	155	158	161	165	171	174	178	182	187	191	195	200	206	211	
Contract Construction	67	69	71	73	75	78	80	82	84	86	88	90	92	95	97	
Manufacturing	409	460	512	565	617	670	721	773	824	876	895	913	932	951	972	
Transport, Comm., Utilities	141	146	149	154	160	165	168	172	176	180	184	188	192	197	200	
Wholesale & Retail Trade	229	233	239	244	250	257	262	267	272	278	285	290	296	301	307	
Finance, Ins., Real Estate	46	48	49	51	52	54	55	56	58	59	60	62	63	64	66	
Services	420	433	448	465	481	500	513	526	538	552	566	581	594	609	623	
Government	283	289	295	301	308	314	320	325	330	335	340	344	347	350	353	
Non-Farm Proprietors	92	94	95	97	100	102	104	106	108	110	112	114	116	118	120	
TOTAL	2,031	2,113	2,202	2,298	2,397	2,497	2,595	2,672	2,761	2,852	2,911	2,966	3,024	3,082	3,140	
Baseline 2																
Agriculture	187	187	187	188	188	191	193	194	194	193	192	193	193	194	194	
Mining	156	155	158	161	166	1,474	1,476	1,480	1,484	1,488	1,492	1,497	1,501	1,507	1,517	
Contract Construction	67	69	71	73	164	601	1,240	1,842	1,421	644	163	164	164	172	175	
Manufacturing	409	460	512	565	617	677	731	785	835	884	902	921	940	959	980	
Transport, Comm., Utilities	141	146	149	154	163	213	234	382	493	585	645	651	656	662	666	
Wholesale & Retail Trade	229	231	239	244	257	411	474	538	519	475	442	458	460	472	481	
Finance, Ins., Real Estate	46	48	49	51	54	90	105	122	116	105	101	100	104	106	108	
Services	420	431	449	465	493	703	791	896	874	817	781	814	827	847	874	
Government	283	289	295	301	314	434	486	548	537	495	469	481	494	497	503	
Non-Farm Proprietors	92	94	95	97	103	174	202	236	225	203	191	197	178	179	201	
TOTAL	2,031	2,114	2,203	2,301	2,519	4,965	5,931	7,025	6,699	5,891	5,377	5,466	5,538	5,615	5,696	

Source: Bureau of Business and Economic Research, University of Utah, 1981.

have been developed by the University of Utah Bureau of Business and Economic Research. These forecasts project employment by place of residence and not place of work, as in Tables 3.4.4.3-1 and 3.4.4.3-2. In the case of White Pine County, many persons working in the county live elsewhere, thereby reducing employment figures. In comparison to the 1977 employment figure of 3,952 presented in Tables 3.4.4.3-1 and 3.4.4.3-2, employment by place of residence for this same year equals 3,430 jobs (Nevada Employment Security Department, 1980). Employment by place of residence for 1978 equals 2,820, and for 1979, this figure declined to 2,780. Forecasts for both Baselines project a further decline in employment by place of residence to 2,031 jobs in 1980. Under Baseline 1 conditions, subsequent to 1980, employment is forecast to increase at an average annual rate of 4.9 percent over the 1980-1994 period, but the total number of jobs increases only by 1,109. Most growth is forecast to occur in the manufacturing sector, followed by service and trade industries. Baseline 2 diverges from Baseline 1 in 1984, when, due to the employment requirements of the two projects identified above, the rate of employment growth more than doubles, yielding an average annual growth rate of 7.1 percent over the 1980-1994 period (Figures 3.4.4.1-2 through 3.4.4.1-4). Under Baseline 2, growth is very heavily concentrated in mining and transportation and also in services and trade industries. All are principal contributors of direct and support employment for the Kennecott and WPPP projects. These projects would very likely induce significant stress on the county's economy as industries adjust; local labor shortages, wage inflation, and in-migration of new workers in key occupations would occur.

Natural Environment (3.4.4.2)

Groundwater (3.4.4.2.1)

Groundwater in Steptoe Valley is contained in the valleyfill deposits. The groundwater is recharged by drainage from the adjacent mountain areas to the alluvial fans. The perennial yield from valleyfill deposits in Steptoe Valley is estimated at 70,000 acre-ft/yr. About 53,000 acre-ft/year of groundwater is withdrawn from the ground valleyfill aquifer. Of this quantity 33,400 acre-ft/yr is withdrawn for domestic and stock supplies of water.

The White Pine Power Project has filed application for about 52,000 acre-ft of water per year. This quantity of water along with the existing water use will exceed the perennial yield in Steptoe Valley. Because of this, the State Engineer's Office classified Steptoe Valley as a designated valley. Obtaining sufficient water for an OB would require alternate sources.

Surface Water (3.4.4.2.2)

Most usable stream flow is derived from runoff from snowmelt in the mountains. Ely is located several kilometers from Steptoe Creek, the only major stream to reach the basin floor. Flow in most smaller streams reaches the lowland only during periods of high runoff from snowmelt or high intensity precipitation. Bassett Lake, about 10 mi NE of Ely is formed by a small dam across the valley lowland.

Springs supply significant quantities of water in the Comins Lake area (6 mi southwest of Ely) and along the west side of the valley southward from Steptoe.

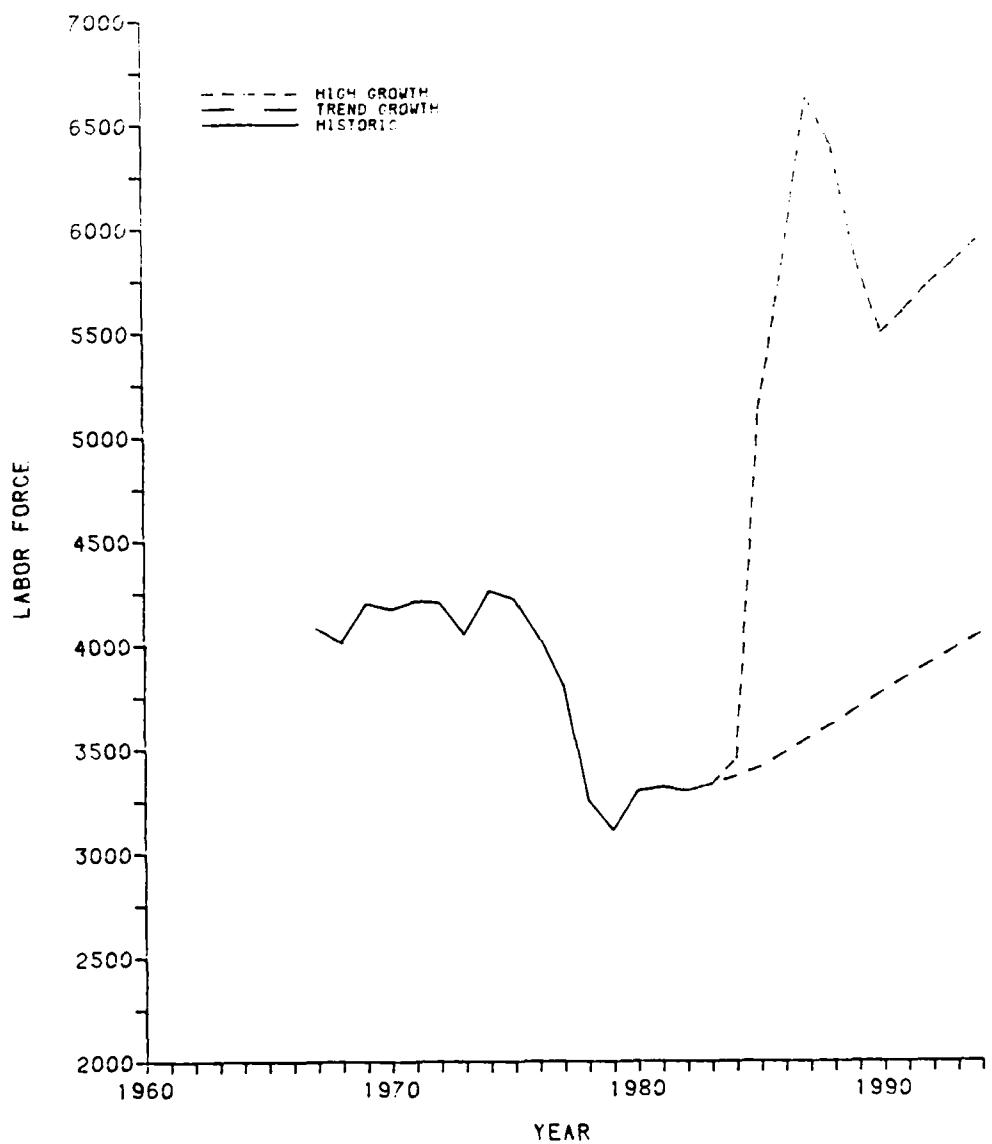


Figure 3.4.4.1-2. Historic and projected baseline labor force in White Pine County.

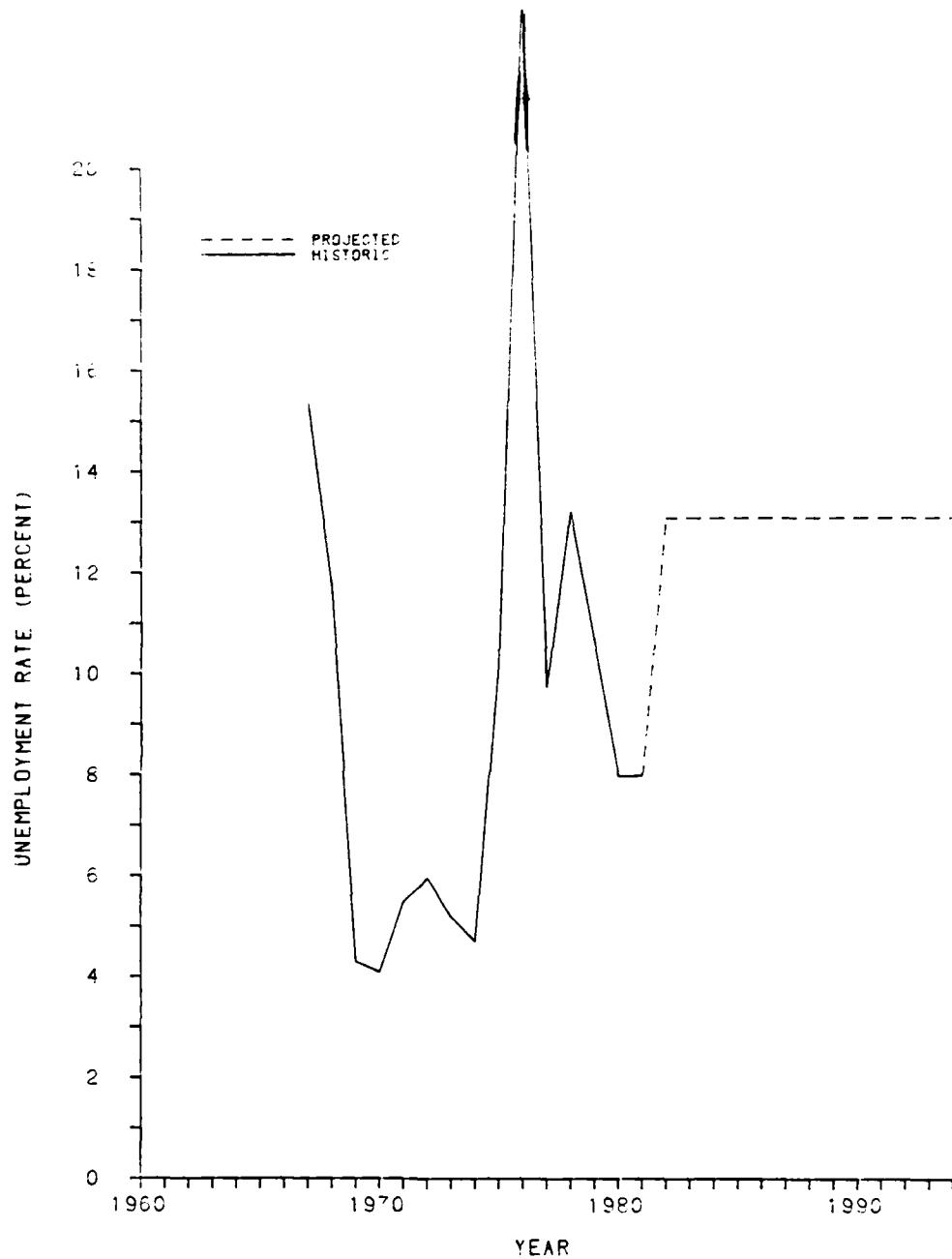


Figure 3.4.4.1-3. Historic and projected baseline rate of unemployment in White Pine County.

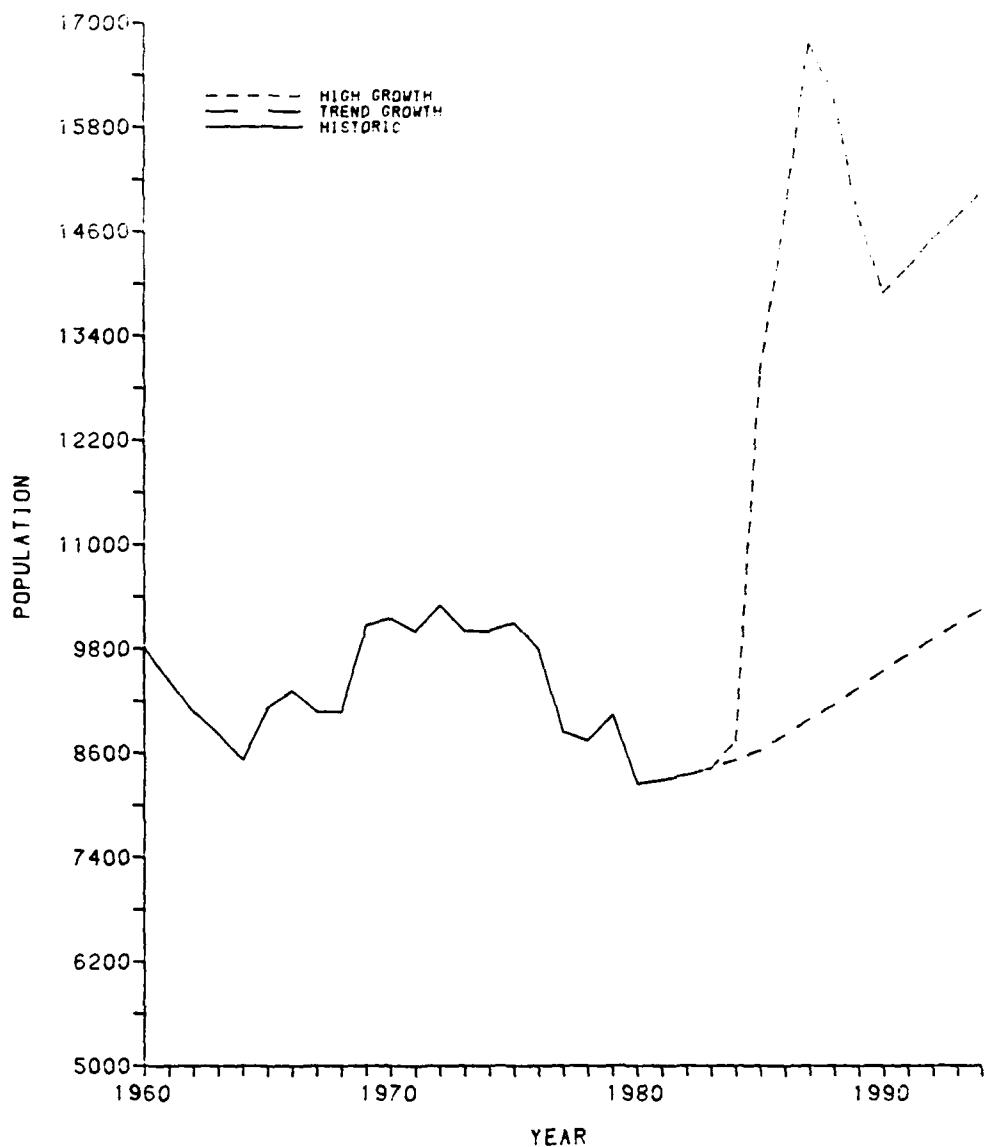


Figure 3.4.4.1-4. Historic and projected baseline population in White Pine County.

Ely's principal source of public supply is from Murry Springs, south of Ely. However, streams and springs are principally sources for supply of agricultural needs. Most of this water has been used to irrigate meadows, hay, and pasture. Mining and copper ore processing use small quantities of water.

Air Quality (3.4.4.2.3)

A summary of some climatological parameters relevant to air quality appear in Table 3.4.1.2-1. Particulate emissions for the Steptoe Valley are 28,998 tons per year from all sources except windblown fugitive dust which contributes an additional 43,758 tons per year. The gaseous pollutants baseline levels are only available on an Air Quality Control Region (AQCR) basis. Ely is located within AQCR No. 147. The baseline levels for CO, SO_x, NO_x, and hydrocarbons reported for AQCR No. 147 are listed in Table 3.4.1.2-2.

Air quality monitoring data collected at the McGill mining facility near Ely show that the National Ambient Air Quality Standard (NAAQS) for sulfur dioxide (SO₂) has been violated, leading to the SO₂ non-attainment status for Steptoe Valley. Annual total suspended particulate (TSP) levels in 1977 equaled the primary NAAQS. There are no data on other gaseous criteria pollutant levels in the region or the city of Ely.

Biological Resources (3.4.4.2.4)

Vegetation and Soils

The soils of the potential OB site south of Ely formed on gently sloping (generally 3 to 5 percent) alluvial fans. They are calcareous, have loamy skeletal textures, and are gray to very pale brown in color. A layer of soil cemented by silica and calcium carbonate, known as a duripan, may be found at less than 29 in. below the surface. The soils are well drained to the duripan, have moderately rapid permeability, low available water capacity, low quantities of organic matter, and a low shrink-swell potential. The erosion hazard on these soils is moderate. Severe limitations exist for these soils if used as septic tank absorption fields while moderate limitations exist if used for local roads and streets. The soils of this area belong primarily to the Durorthid great group of the USDA soil taxonomic system. Minor areas of soils belonging to the Torriorthent, Camborthid, and Haplargid great groups also exist.

The main vegetation and landcover types on the valley bottom and low bajadas are primarily hay meadows, desert marsh and spring, riparian, shadscale scrub, and Great Basin sagebrush. Great Basin sagebrush, grassland, and pinyon-juniper woodland dominate the mid and high bajadas (Figure 3.4.4.2-1).

Comins Lake and Steptoe Creek are located in the portion of the valley proposed as an operating base location. Agricultural activity (primarily hay meadows) occurs along Steptoe Creek from the town of Ely south towards Comins Lake and in the valley bottom south of Comins Lake.

The bajadas between 6,400 ft and 7,000 ft are dominated by big sagebrush (Artemisia tridentata), black sagebrush (Artemisia nova) and areas of bunchgrass. In some areas the grassland was treated by removing the original native vegetation,

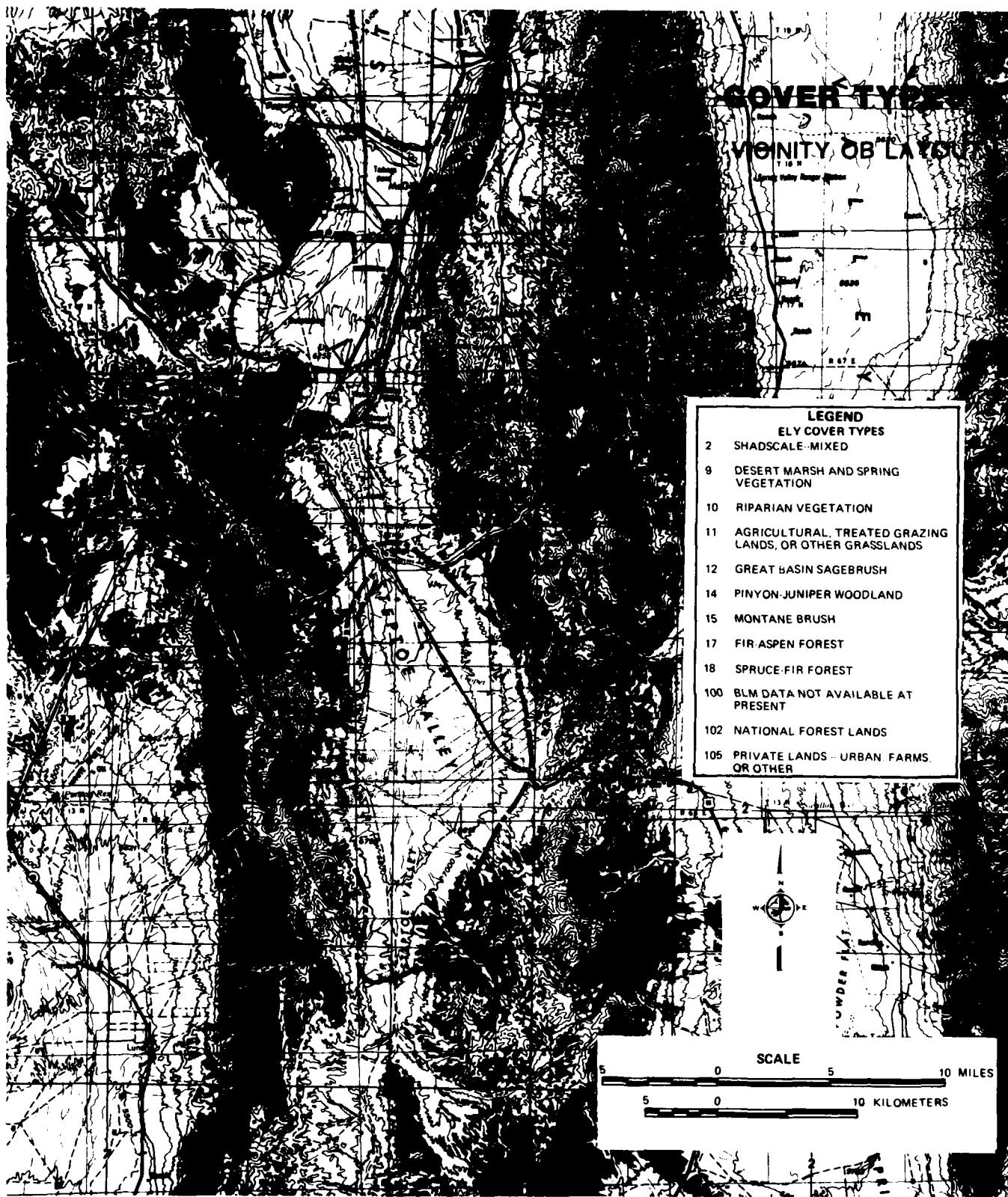


Figure 3.4.4.2-1 Vegetation cover types in the vicinity of Ely

usually Great Basin sagebrush. Planted crested wheatgrass (Agropyron cristatum), an introduced forage species, is usually the dominant species in treated grasslands.

The valley floor between the towns of Ely and McGill is dominated by the shadscale scrub vegetation type, including winterfat (Eurotia lanata) and shadscale (Atriplex confertifolia). Pinyon-juniper woodland with an understory of either Great Basin sagebrush or montane brush occurs on the high bajadas and lower mountain slopes.

Wildlife

Mule deer occur throughout the mountains surrounding Ely, with key summer range to the west in the Egan Range and key summer, winter, and yearlong range to the east in the Duck Creek Range. A mule deer migration route crosses Highway 93 to the east of the base site in the Duck Creek Range. Pronghorn antelope winter and yearlong key habitats are located north of the Ely site. Elk range, including key summer and winter habitat, is present to the east in the Duck Creek Range. Sage grouse range, with strutting grounds and brood use areas, is located throughout Steptoe Valley from the valley floor up into the mountains. Waterfowl are found on Comins Lake, in southern Steptoe Valley and many other water sources north of Ely in Steptoe Valley.

Aquatic Species

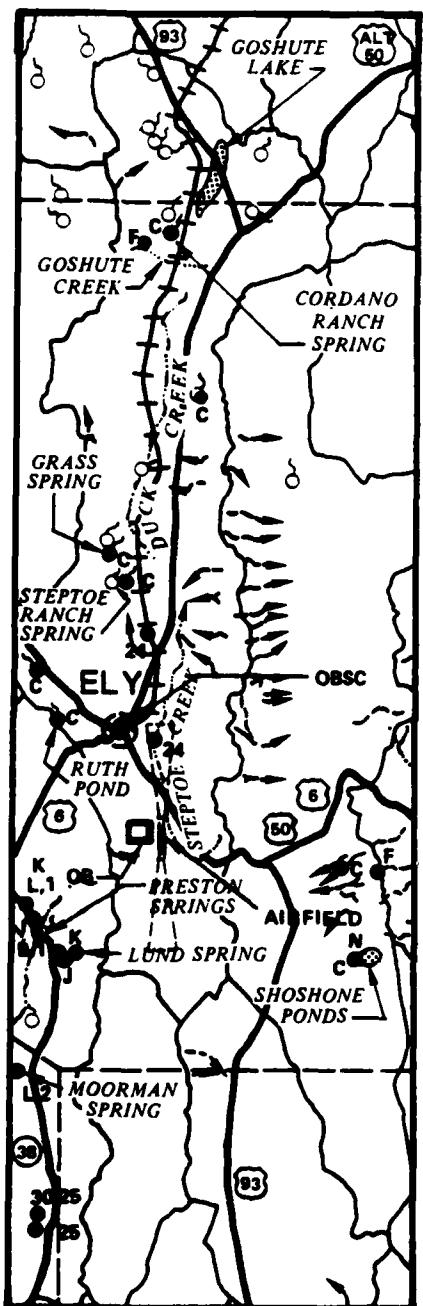
Within the watershed containing the proposed Ely OB, 17 streams contain trout populations sufficiently large to support game fisheries. Principal game species are rainbow, brook, and brown trout. Cutthroat trout are also present in two streams in the northern portion of Steptoe Valley. Northern pike, bass, and other warm-water fish are found in Comins and Bassett Lakes.

Protected Species

Bald eagles (federally protected) have been observed foraging during the winter months approximately 6 mi to the north of the proposed site in Steptoe Valley. They have also been observed approximately 12 mi to the east in Spring Valley. No traditional roost sites have been found in these valleys.

One state protected fish, the relict dace, occurs in aquatic habitats about 6 mi or more from the proposed OB location near Ely (Figure 3.4.4.2-2). Although it is listed as threatened by the Nevada Department of Wildlife, its status is in the process of being downgraded with the recent discovery of numerous new populations. A recommended protected snail, the Steptoe turban, also occurs approximately 5 mi from this location. The endangered Utah cutthroat trout also resides 50-60 mi north of the site in Goshute Creek. Several of the protected and recommended protected species occur in adjacent valleys.

The broad pod freckled milkvetch (Astragalus lentiginosus var. latus), listed by the Northern Nevada Native Plant Society as a species of special concern, is known to exist from the Ward Mine area about 5 mi south of the operating base. This species is usually found in colonies on limestone gravel slopes in the timber belt at about 7,500 ft elevation. Other species are known to occur in the mountains east and west of the OB site. Three species occur within the suitability zone. They are



LEGEND

PROTECTED FISH SPECIES FOR NEVADA AND UTAH

- C RELICT DACE
- F UTAH OR SNAKE VALLEY CUTTHROAT TROUT
- J WHITE RIVER SPINE DACE
- K WHITE RIVER DESERT SUCKER
- L WHITE RIVER SPRING FISH
- N PAHRUMP KILLIFISH

RECOMMENDED PROTECTED FISH SPECIES FOR NEVADA AND UTAH

- 1 PRESTON WHITE RIVER SPRINGFISH
- 2 MORMON WHITE RIVER SPRINGFISH

RECOMMENDED PROTECTED INVERTEBRATES AND MOLLUSKS

- 23 HOT CREEK TURBAN
- 24 STEPTOE TURBAN
- 25 WHITE RIVER VALLEY FONTICELLA
- 30 WHITE RIVER VALLEY HYDROBIID

• FEDERALLY PROTECTED

● OPEN WATER

○ SPRINGS

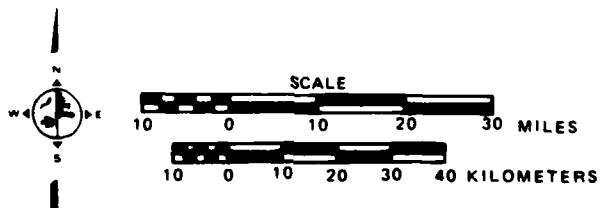


Figure 3.4.4.2-2. Protected and recommended protected aquatic species located near Ely.

the Monte Neva Indian paintbrush (Castilleja salsuginos), the spring-loving centaury (Centaureum namophium), and the sheathed death-camas (Zigadenus vaginatus). The paintbrush may be federally listed in the near future.

Wilderness and Significant Natural Areas

Potential wilderness areas and significant natural areas located within a 50 mi radius of the proposed OB site near Ely are listed in Table 3.4.4.2-1.

Human Environment (3.4.4.3)

Employment (3.4.4.3.1)

The city and county have recently experienced a sizable economic downturn as a result of reductions in copper mining and smelting. Two major copper mining plants ceased operations in mid-1978, which eliminated a total of about 1,000 jobs in White Pine and Lyon counties. In August 1979, the smelter operation at the McGill plant in White Pine County resumed operations, but only to give the company a chance to meet EPA emission standards. About 130 individuals returned to work with an additional 100 to be recalled in the near future (Nevada Area Labor Review Balance of State, 1979).

Tables 3.4.4.3-1 and 3.4.4.3-2 highlight detailed employment characteristics of White Pine County. The former table indicates the relative dependence of the county's economy on only two sectors -- government, comprising 24 percent of total employment in 1977, and mining, the source of 17 percent of 1977 county employment. Other sectors, notably manufacturing and services, traditionally dominate a well-balanced economic base. In White Pine County, manufacturing particularly has a very small employment share and the 1977 share of services employment in the county was less than half that for the state; it was below the national average.

Table 3.4.4.3-2 presents 10-year employment growth figures and indicates that White Pine County has grown very little; employment only increased by about 500 jobs between 1967-1977. Disclosure rules prevent complete analysis, but available data indicate only the government sector has grown appreciably, posting an average annual growth of 4.2 percent over the 1967-1977 period. Other sectors have been less well insulated from recent price and production downturns in the mining industry, historically the dominant force in the White Pine County economy.

The baseline labor force for White Pine County is traced graphically from 1967-1994 in Figure 3.4.4.1-2. The amount of workers in the labor force has decreased over the past 13 years from 4,080 in 1967 to 3,298 in 1980. Labor force projections from 1980 to 1994 are dependent on the amount of growth that occurs within the county during that period. Two projections - high growth and trend Growth - illustrate two distinctly different economic futures for the county. Trend growth assumes that no major projects will be undertaken in the county over the 1980-1994 period and projects that the labor force will increase to about 4,000 workers by 1994. High growth assumes that several major projects will induce additional workers into the county. With these other projects, the labor force is projected to climb to 7,600 in 1987 and then decrease to 5,400 in 1990. By 1994, 5,900 workers are projected to be available for employment in White Pine County.

Table 3.4.4.2-1. Potential wilderness significant natural areas within a 50-mi radius of the Ely OB site.

POTENTIAL WILDERNESS AREAS	
NEVADA	MI FROM OB SITE
1) Far South Egan Range	43
2) Fortification Range	47
3) Goshute Canyon	47
4) Mount Grafton	28
5) Riordan's Well	50
6) South Egan Range	24
7) Blue Eagle	48
8) Granite Spring	36
UTAH	
No areas < 50 miles (80 km) from potential Ely OB site.	
SIGNIFICANT NATURAL AREAS	
NEVADA	MI FROM OB SITE
1) Duckwater	48
2) Goshute Canyon	46
3) Goshute Cave	48
4) Hercules Gap	6
5) Heusser Mountain Bristle Cone Pine	17
6) Hot Creek Spring & Marsh	40
7) Lehman Caves	24
8) Lexington Arch	27
9) Mormon Spring Fish Sanctuary	30
10) Mount Grafton	12
11) Mount Moriah	23
12) Preston Big Spring	15
13) Railroad Valley	50
14) Shoshone Ponds	15
15) Shoshone Pygmy	12
16) Snake Range/Spring Valley Study Area	7
17) Spring Valley White Sage Flat	7
18) Spring Valley Swamp Cedar	14
19) Swamp Cedar	14
20) Wayne Kirch	38
21) Wheeler Peak Scenic Area	19
22) Whipple Cave	30
UTAH	
1) The Caves of Gandy Mountains	42

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Table 3.4.4.3-1. Total employment and percent share by major economic sectors for counties in Nevada, 1977.

COUNTY	TOTAL EMPLOYMENT 1977	COUNTY PERCENT OF TOTAL EMPLOYMENT	AGRICULTURE SHARE (%)	MINING SHARE (%)	CONSTRUCTION SHARE (%)	MANUFACTURE SHARE (%)	SERVICES SHARE (%)	GOVERNMENT SHARE (%)
Carson City	14,313	4.1	0.2	0.2	6.7	6.6	17.3	43.3
Churchill	5,131	1.5	13.7	(D)	7.7	2.9	12.4	41.8
Clark	185,198	53.1	1.7	(D)	5.6	3.0	41.4	17.5
Douglas	13,365	3.8	2.1	(D)	4.1	5.5	68.4	5.5
Elko	8,300	3.4	9.9	2.9	4.0	8.7	27.1	21.1
Esmeralda	368	0.1	16.0	(D)	(D)	N.L.	N.L.	36.1
Eureka	620	0.2	70.2	93.7	(D)	(D)	(D)	21.8
Humboldt	3,905	1.1	14.2	(D)	3.3	4.7	18.3	18.9
Lander	1,521	0.4	10.0	39.8	(D)	(D)	3.7	19.5
Lincoln	1,213	0.3	13.7	12.4	(D)	(D)	(D)	36.1
Lyon	3,327	1.0	16.2	16.0	2.6	8.6	7.9	21.8
Mineral	2,555	0.7	1.5	0.6	2.3	(L)	16.5	60.2
Nye	5,661	1.6	3.1	10.4	1.2	0.8	59.5	13.1
Pershing	1,303	0.4	21.9	(D)	0.8	3.1	(D)	22.9
Storey	509	0.1	N.L.	(D)	(D)	2.4	7.5	17.7
Washoe	97,254	27.9	0.3	5.7	7.3	7.0	33.7	15.2
White Pine	3,952	1.1	5.1	17.2	(D)	7.5	12.4	24.0
Total State ¹	348,495	100.0	1.4	1.2	5.7	4.3	37.1	18.4
United States	97,848,874		4.2	0.8	4.0	20.1	17.4	18.2

¹State = study area.

N.L. = Not listed

Source: Dept. of Commerce, April 1979.

059-1

Table 3.4.4.3-2. Nevada employment growth by sector, study area counties, 1967-1977.

COUNTY	TOTAL	AGRICULTURE	MINING	CONSTRUCTION	MANUFACTURING	SERVICES	GOVERNMENT
	1967	1977	A1	1967	1977	A	1967
Churchill	3,930	5,131	2.7	642	704	0.9	(D) ⁷
Clark	97,051	185,198	6.6	389	312	0.8	260 (D)
Eito	6,027	8,300	3.3	755	824	0.9	240 (D)
Esmeralda	318	368	1.5	45	59	2.7	(D) (D)
Eureka	538	620	1.4	120	125	0.4	195 (D)
Humboldt	3,048	3,905	2.5	400	554	3.3	254 (D)
Lander	1,086	1,521	3.4	123	152	2.1	605 (D)
Lincoln	862	1,213	3.5	146	166	1.3	94 (D)
Mineral	2,965	2,555	-1.5	36	39	0.8	63 (D)
Nye	8,319	5,661	-4.4	233	175	-2.8	370 (D)
Pershing	1,154	1,303	1.2	274	286	0.4	98 (D)
White Pine	3,514	3,952	1.2	183	302	5.1	(D) 679 (D)
Region Total	112,870	198,165	5.8	1,094	1,232	1.1	865 2,292 2.2
State Total	200,226	348,495	5.7	4,318	4,748	1.0	3,500 4,331 2.2
U.S. Total (Millions)	82.5	97.8	1.7	4.6	4.2	-1.2	.6 (B) 3.0

¹A = Average annual growth rate.

²(D) not shown to avoid disclosure of confidential information

³(L) less than 10 wage and salary jobs.

⁴Rate in doubt because of large number of data points withheld by disclosure rules.

Source: BEA, April, 1979.

The baseline unemployment rate in White Pine County is shown graphically from 1967 to 1994 in Figure 3.4.4.1-3. The rate has varied drastically between 4 and 23 percent during the last decade and a half. It reached its peak 23 percent unemployment during 1976 with the closure of Kennecott Copper's Ruth mining and processing plant. The current unemployment rate is 8 percent, but it is projected to rise to 13 percent by 1982 and remain at that level through 1994.

Income and Earnings (3.4.4.3.2)

Total earnings have exhibited little growth over the 1967-1977 period. Table 3.4.4.3-3 highlights White Pine County earnings by major industrial sectors relative to the other counties in Nevada. It indicates that the county's 1977 total earnings of \$44.95 million were only about 1 percent of the state's total. Further, White Pine County earnings growth was less than one-half that for Nevada over the 1967-1977 period. Disaggregating earnings by industry, the same pattern of negligible growth is observed.

Table 3.4.4.3-4 highlights per capita income and earnings shares by major industry in White Pine County. The county's 1977 per capita income of \$6,608 was roughly 80 percent that of Nevada's, but 94 percent of U. S. per capita income. By industrial source, mining contributed almost one-third of White Pine County's total 1977 earnings, well above what employment in this industry would have indicated. This implies that mining had earnings levels well above those in other industries. The same was true, but to a lesser extent, for the manufacturing sector. It is characteristic for workers in these two industries to receive relatively higher compensation than in agriculture or government sectors, for example.

Public Finance (3.4.4.3.3)

Residents of Ely and vicinity are provided public services by the county of White Pine, White Pine County School District, and the City of Ely. The revenue structures, expenditure patterns, and bonding capacities vary widely among the jurisdictions. While property tax revenues account for approximately one third of the total general fund revenues of the county and of the city of Ely, intergovernmental transfers (principally in the form of redistributed cigarette, liquor, and motor vehicle privilege taxes and federal revenue sharing monies) account for a much larger share of total general fund revenues for the city than for the county (County of White Pine Statement of General Fund Revenues and Expenditures; City of Ely Statement of General Fund Revenues and Expenditures).

Principal expenditures in the county and the city are for public safety outlays (fire, police, and civil defense outlays), ranging from 26.0 percent of total general fund outlays in the county to 45.9 percent in the city.

Assessed valuations, indebtedness limitations, and reserve bonding capacities for the local jurisdictions in White Pine County are presented in Table 3.4.4.3-5. All jurisdictions have much of their total bonding capacity available. However, because of the relatively low tax bases within each jurisdiction, the reserve bonding capacities also are relatively low, ranging from \$5.3 million in the city of Ely to \$7.9 million in White Pine County School District.

Table 3.4.4.3-3. Earnings by economic sector, Nevada counties, 1967-1977 (in millions of 1977 dollars).

COUNTY	TOTAL EARNINGS			AGRICULTURE			MINING			CONSTRUCTION		
	1967	1977	GROWTH RATE	1967	1977	GROWTH RATE	1967	1977	GROWTH RATE	1967	1977	GROWTH RATE
Carson City	58.15	159.16	8.9	.076	.069	-1.0	.886	.151	-8.8	1,015	15,862	18.1
Churchill	34.3	49.3	3.5	3.5	4.83	3.3	.16	.09	-2.5	2.5	2.9	1.5
Clark	1230.1	2262.5	6.3	1.37	3.71	1.0	4.69	.9	-15.2	76.26	196.57	9.9
Douglas	30.09	133.47	5.2	1.52	2.12	3.4	(D)	-.627	(D)	3.53	11.4	12.4
Elko	65.22	83.13	2.5	10.9	3.23	-11.5	1.3	3.0	8.7	3.53	6.0	5.4
Esmeralda	2.77	3.62	2.7	-1.0	.388	3.3	(D)	(D)	(D)	(D)	(D)	(D)
Eureka	7.44	7.33	-0.2	1.91	.70	-9.6	3.27	4.58	3.4	(D)	.065	(D)
Humboldt	31.21	37.38	1.8	3.77	4.63	2.1	3.55	.2	-25.0	1.23	2,012	5.0
Lander	12.86	18.38	3.6	1.37	.89	-4.2	(D)	10,118	(D)	(D)	(D)	(D)
Lincoln	6.9	12.35	6.0	.18	.81	16.2	1.35	2.29	5.4	(D)	(D)	(D)
Lyon	30.74	34.65	1.2	3.52	4.65	2.8	(D)	8.49	(D)	3.66	1.67	-7.6
Mineral	32.19	26.93	-1.9	.002	.212	59.4	.99	-.306	-49.8	.212	1.35	20.3
Nye	168.3	92.67	-5.8	.917	.714	-2.5	5.34	9.83	6.3	(D)	1.23	(D)
Pershing	11.29	13.99	2.2	2.32	4.08	5.8	1.47	(D)	(D)	.36	.325	-1.0
Storey	3.02	5.24	5.7	.067	0	-20.0	(D)	(D)	(D)	(D)	(D)	(D)
Washoe	646.78	1,162.9	5.9	-.423	1.975	37.4	3.38	8.13	9.2	57.57	144.21	9.6
White Pine	37.13	44.95	1.9	1.27	.663	-6.3	(D)	13.65	(D)	.696	.7	0.0
State	2469.0	4148.6	5.3	34.14	33.67	-0.1	54.64	65,398	1.8	159.1	386.27	9.3
U.S.	921,344	1,164,755	2.4	31,950.7	26,163	+2.0	9,715.6	18,115	6.4	54,730.6	69,617	2.4
COUNTY	MANUFACTURING			SERVICES			GOVERNMENT			Source: Bureau of Economic Analysis, 1979.		
	1967	1977	GROWTH RATE	1967	1977	GROWTH RATE	1967	1977	GROWTH RATE			
Carson City	.937	11.44	28.4	10.08	27,776	10.7	38.56	73.12	6.6			
Churchill	.83	2.1	9.7	2.69	6.69	9.5	16.45	22.02	3.0			
Clark	59.18	37.16	3.9	542.28	970.14	6.0	227.93	369.8	5.0			
Douglas	1.8	10.06	18.8	61.09	87.32	3.6	3.5	6.95	7.1			
Elko	.76	.9	1.7	14.95	23.1	4.4	12.84	18.66	3.8			
Esmeralda	(D)	(D)	(D)	(D)	0	(D)	.31	.803	10.0			
Eureka	(D)	(D)	(D)	(D)	(D)	(D)	.88	1,302	4.0			
Humboldt	(D)	1.85	(D)	5.09	6,514	2.5	6.48	7,788	1.9			
Lander	(L)	(D)	(D)	.67	.64	-0.5	2.33	3.37	3.8			
Lincoln	(D)	(D)	(D)	.25	.6	9.1	2.7	4.44	5.1			
Lyon	2.28	4.17	6.2	(D)	2.69	(D)	4.26	6.26	3.9			
Mineral	.11	.129	1.6	3.3	3.3	0.0	23.79	18.15	-2.7			
Nye	.48	.423	-1.3	145.3	66.4	-7.5	8.39	7.78	-1.4			
Pershing	(D)	.4	(D)	.91	(D)	(D)	2.1	2.65	2.4			
Storey	(D)	.11	(D)	.36	.458	2.4	.45	.956	-.3			
Washoe	31.33	92.13	11.4	224.09	356.36	4.7	48.82	177.77	6.0			
White Pine	(D)	5.67	(D)	3.44	4.05	1.6	6.53	9.43	3.7			
State	102.45	216.73	7.8	1016.8	1557.6	4.4	456.43	731.26	4.8			
U.S.	269,026	305,747	1.3	135,753	193,746	3.6	151,707	199,470	2.8			

Source: Bureau of Economic Analysis, 1979.

Table 3.4.4.3-4. Per capita income and earnings shares by economic sector, Nevada counties, 1977.

	1977 PER CAPITA INCOME	TOTAL 1977 EARNINGS (000s of \$)	COUNTY % OF TOTAL	AGRICUL- TURE SHARE (%)	MINING SHARE (%)	CONSTRUC- TION SHARE (%)	MANUFAC- TURING SHARE (%)	SERVICES SHARE (%)	GOVERNMENT SHARE (%)
Carson City	7,234	159,163	3.8	0.1	0.2	10.0	7.2	17.5	45.9
Churchill	6,066	49,916	1.2	9.7	0.2*	5.9	4.1	13.4	44.1
Clark	7,735	2,262,502	54.5	0.2	0.1*	8.7	3.9	42.9	16.3
Douglas	9,030	133,472	3.2	1.6	0.5	8.5	7.5	65.4	5.2
Elko	7,464	83,132	2.0	3.9	3.6	7.2	1.1	27.8	22.4
Esmeralda	5,543	3,623	0.1	10.7	(D)	(D)	(NL)	0	22.2
Eureka	6,149	7,334	0.2	9.5	62.4	0.1	(D)	(D)	17.8
Humboldt	6,168	37,379	0.9	12.4	0.5*	5.4	4.9	17.4	20.8
Lander	6,059	18,378	0.4	4.9	55.1	(D)	0	3.5	18.4
Lincoln	5,843	12,348	0.3	6.6	18.5	(D)	1.3*	4.9*	35.9
Lyon	6,017	34,651	0.8	13.4	24.5	4.8	12.0	7.8	18.1
Mineral	6,568	26,929	0.6	0.8	1.1	5.0	0.5	12.3	67.4
Nye	5,801	93,673	2.2	0.8	10.6	1.3	0.5	71.7	8.4
Pershing	6,437	13,985	0.3	29.2	(D)	2.3	2.9	(D)	19.0
Storey	5,585	5,240	0.1	0.0	(D)	1.0*	2.1	8.7	18.2
Washoe	9,368	1,162,907	28.1	0.2	0.7	12.4	7.9	30.6	15.3
White Pine	6,608	44,954	1.1	1.5	30.4	1.8*	12.6	9.0	21.0
State Total	7,980	4,148,586	100.0	0.8	1.6	9.3	5.2	37.5	17.6
U.S.	7,026	1,164,755,000		2.2	1.6	6.0	26.2	16.6	17.1

556

*Estimated.

(D) = Data not provided because of disclosure rules.

(NL) = No Listing.

Source: BEA, April 1979.

Table 3.4.4.3-5. Assessed valuations, indebtedness limitations, and reserve bonding capacities in selected jurisdictions of the Ely vicinity, 1978-1979.

JURISDICTION	ASSESSED VALUE	INDEBTEDNESS LIMITATION	OUTSTANDING G.O. BONDS	RESERVE BONDING CAPACITY
White Pine County	\$53,147,724	\$5,314,772	\$305,000	\$5,009,772
School District	53,147,724	7,972,159	-	7,972,159
City of Ely	17,794,278	5,338,283	-	5,338,283

1012

Source: State of Nevada, Department of Taxation, Local Government Green Book, 1978.

Principal sources of revenue to the school district are derived from the state and White Pine County. Principal expenditures are for instructional services (salaries and supplies) and operation and maintenance of the physical plant, accounting for over 74 percent of total operation and maintenance outlays (Annual Report of the Superintendent of Public Instruction, 1978).

Population (3.4.4.3.4)

Ely, along with Ruth and McGill, is the major settlement in White Pine County, and is located within Steptoe Valley in Nevada. In 1978, the population of White Pine County was estimated at 8,841, a decline of 13 percent since 1970, as shown in Table 3.4.4.3-6. Similar trends were observed in the town of Ely, whose 1978 population of 5,292 persons had declined by 15 percent from 1970. Ely accounted for 60 percent of the county's 1978 population.

The average household size of the county declined from 3.22 in 1970 to about 2.9 in 1979, resulting in a lower rate of decline for the number of households than for population. Median age has also decreased in the county, from 26.3 years in 1970 to 24.4 in 1978, as shown in Table 3.4.4.3-7.

Housing (3.4.4.3.5)

White Pine County has experienced little growth in housing over the last two decades. From 1960 to 1970, the county had a net decline in housing of 0.6 percent when the housing stock dropped from 3,492 to 3,289 units. From 1970 to 1976, housing recovered slightly, growing at an annual rate of 0.9 percent, to reach 3,470 units by 1976. The proportion of the county's housing stock in single-family units decreased slightly from 77.4 percent in 1970 to 76.6 percent in 1976, as did the proportion of multi-family units (10.5 percent to 10.3 percent). Mobile homes' share increased to 13.2 percent in 1976, from 12.1 percent in 1970. Over the period 1970 to 1979, an average of 12 conventionally-built housing units were added each year, as indicated from annual permits authorizing residential construction. The maximum annual construction of 29 units was in 1970. From 1970 to 1976, estimated net annual mobile home deliveries averaged only eight. In 1970, about 73 percent of the housing units were owner-occupied. In the same year, almost 45 percent of the county's housing stock was located in Ely.

Community Infrastructure (3.4.4.3.6)

Organization

Ely, incorporated as a general law city, has a mayor/council form of government with an appointed city clerk, city attorney, and municipal judge. The mayor is elected in general election. County government is run by a three member commission, two of whom are elected every two years. A regional planning commission considers planning (issues and policies) for all of White Pine County. To promote industrial development, the county has created a non-profit County Redevelopment Corporation. Recently, a county Economic Development Committee was organized to recommend, review, and solicit funding for economic development projects in the county.

Table 3.4.4.3-6. Population, White Pine
County and Ely, 1970,
1975, 1978.

AREA	1970	1975	1978
White Pine County	10,150	10,000	8,841
Ely	6,216	6,213	5,292

324

Sources: Office of the State Planning Coordinator,
Jan. 1978, *Nevada Statistical Abstract*
1977, Carson City, Nevada; and Nevada
Bureau of Business and Economic Research,
July 1977, *Socioeconomic Analysis of the*
White Pine Power Project, Reno, Nevada.

Table 3.4.4.3-7. Percentage distribution of population by age, White Pine County, Nevada, 1970, 1975, and 1978.

AGE GROUPS	PERCENT OF TOTAL POPULATION		
	1970	1975	1978
0-4	10.0	9.3	10.2
5-19	31.2	30.9	30.9
20-29	13.9	14.9	14.7
30-39	11.7	12.0	10.6
40-49	11.0	10.7	10.4
50-59	10.5	9.9	10.3
60-69	6.8	7.5	8.1
70+	4.9	4.8	4.7
Total ¹	100.0	100.0	99.0
Median Age	26.3	26.1	24.4

2773

¹Components may not add to 100.0 due to rounding.

Source: Nevada Bureau of Business and Economic Research, Socio Economic Analysis of the White Pine Power Project, 1979.

Education

In 1979, there were 1,664 students in the seven schools which comprise the White Pine County School District. Enrollments totaled 122 at the kindergarten level, 632 in elementary grades, 791 in secondary grades, and 119 in special education courses. One hundred six teachers are employed by the White Pine School District. The facilities of the system currently have an excess capacity of more than 1,000 pupils.

Health Care

A 44-bed hospital in Ely had a utilization rate of 24.7 percent in 1978. The facility represents 6.1 beds per 1,000 population. The White Pine Care Center in Ely has 99 skilled-nursing beds, 8 intermediate-care beds, and 13 adult group care beds. There is also a rural-clinic community mental health center in Ely. Four physicians serve the area along with 19 registered nurses, 10 LPNs, 46 aides, three dentists, and six mental health professionals.

Police Protection

Law enforcement services are provided by the White Pine County Sheriff's Department, the Ely Police Department, and the Nevada Highway Patrol. The White Pine County Sheriff's Department presently has one sheriff, one undersheriff, 11 full-time, and two part-time deputies. Ely Police Department has one chief, one assistant chief, and 12 patrolmen. Nevada Highway Patrol has three officers stationed in the county.

Fire Protection

Fire protection services are provided by two professional and one all-volunteer fire companies. Ely Fire Department has one fire chief, five firemen, 45 volunteers, and 4 firefighting vehicles and 2 rescue trucks which operate out of one station. Its fire insurance rating was 5 on a scale of 10. McGill, with an insurance rating of 7, has four firemen, 11 volunteers, and two vehicles.

Water Supply And Distribution

The city of Ely, Nevada owns and operates its municipal water system. The city's source of supply includes two wells which are used to supplement a surface source, Murry Springs, which supplies off-peak demand. The two wells, which are presently used only during the summer, have capacity of 1,000 gpm and 950 gpm for a total of 1,950 gpm. Water rights held by the city total 7,940 gpm. Flow from Murry Springs has decreased from about 4,600 gpm in 1970 to 2,100 gpm in 1979. Current use averages 350 gpm and totals 2.1 MGD. Available supply totals 5.8 MGD including 3.0 MGD from Murry Springs and 2.8 MGD from the two wells.

A 16-in. water main extends from the collector at Murry Springs to the Murry Booster Station. A 12-in. main serves East Ely and the balance of the distribution system consists of 31 mi of main varying in size from 10 in. to 4 in. The city has a class 5 fire rating and is actively following a program to upgrade the water system. System storage capacity includes five tanks with a total capacity of 6.05 million gallons. Plans call for adding 1.5 MG and retiring 0.05 MG which will bring total storage capacity to 7.5 million gallons.

Wastewater Collection and Treatment

The collection system in Ely consists of 6- and 8-in. PVC pipe. East Ely was seweried in 1954, while the balance of the system was constructed over a period of 75 years and experiences considerable inflow and infiltration through deteriorated bituminous joints and from cross connections with the storm water system. Infiltration, wet weather flow, and three flush tanks in the collection system contribute significant hydraulic loading to the treatment facility. If inflow and infiltration were eliminated, the treatment facility would have capacity two to three times greater than current use. Treatment consists of extended aeration followed by oxidation ponds with 14 acres of surface area. There is no active discharge to Murry Creek although it is permitted and the city holds a permit for discharge.

Solid Waste

Solid waste disposal for Ely, Ruth, and McGill is provided by a 40 acre sanitary landfill. Use of this facility began in 1975, and approximately 5 acres have been utilized. It is estimated that this landfill can serve a population of 10,000 persons until the year 2005.

Parks and Recreation

The city of Ely has several recreational facilities which include: a county park with swimming pool, six neighborhood parks, five elementary school playgrounds, a high school playfield, and others. Outdoor recreational areas within a 50 mi radius are expected to receive the greatest use by Ely residents.

Parklands

There are a number of developed camping sites in the Humboldt National Forest around Ely. In addition there are two Nevada State Park Campgrounds and one private campground (Table 3.4.4.3-8). There are approximately 80 camping sites within 50 mi of Ely. Although somewhat farther away the Lehman Creek and Wheeler Peak campgrounds are expected to increase in use because of the attraction of Lehman Caves National Monument and the Wheeler Peak Scenic Area, an area known for its exceptional geology and plant life, including an ancient bristlecone pine forest.

Approximately 50 to 60 mi to the south, the Nevada Wildlife Department has two wildlife areas managed by the BLM, Railroad Valley and Wayne A. Kirch. Both these areas provide hunting opportunities and the Kirch area has fishing. The Ruby Lake National Wildlife Refuge is approximately 100 mi to the north of Ely and offers excellent hunting and fishing.

Water Related Recreational Facilities

There are three bodies of water large enough to support boating: Cave Lake, Bassett Lake and Comins Lake, within 50 mi of Ely. The lakes total 175 surface acres and provide fishing and boating (power and nonpower). Ruby Marsh and the Dacey, Haymeadow and Adams - McGill Reservoirs all have fishing and boating, but

Table 3.4.4.3-8. Developed recreation sites in the Ely vicinity.¹

SITE NAME	ACTIVITY	UNITS	[±] MILES FROM ELY
Humboldt National Forest			
Ward Mt. Rec. Area	Camping Picnicking Hunting	22 camps — —	8
East Creek	Camping Picnicking Hunting Fishing	2 camps — — stream	15
Bird Creek	Camping Hunting Fishing	8 camps — stream	20
Timber Creek	Camping Picnicking Hunting Fishing	12 camps — — stream	30
Berry Creek	Camping Hunting Picnicking Fishing	4 camps — — stream	35
Cleve Creek	Picnicking Hunting Fishing	— — stream	50
Lehman Creek	Camping Picnicking Fishing Hunting	34 camps — stream —	65-70
Wheeler Peak	Camping Picnicking Hunting Fishing	37 camps — — stream	70-75
Baker Creek	Camping Picnicking Hunting Fishing	17 camps — — stream	65
White River	Camping Fishing Hunting Picnicking	8 camps stream — —	35
Current Creek	Camping Fishing Hunting Picnicking	6 camps stream — —	50
Nevada State Park System			
Cave Lake	Camping Picnicking Fishing Hunting Boating	20 camps — — — 1 launch	15
Ward Charcoal Ovens	Camping Picnicking	6 camps —	15
Private			
Camp Success Boy Scout Camp	Camping Hunting	4 camps —	20

3808

¹Within 50 mi radius.

Source: U.S.D.A., 1969.

as noted above are much farther away. The nearest water skiing area would be at Eagle Valley Reservoir to the south. There are no freshwater swimming areas (Nevada State Parks, 1977).

Snow Related Recreational Facilities

There are no developed snow ski areas around Ely, however, cross country skiing and snow play areas exist in the Snake Division of Humboldt National Forest. The nearest snow skiing facilities would be at Mt. Charleston to the south (Nevada State Parks, 1977).

ORV and Other Forms of Dispersed Recreation

There are no developed ORV parks in the Ely vicinity. The supply of off-highway vehicle areas is virtually incalculable with present data. U.S. Forest Service trails and much of the BLM lands are available. However, both these agencies are in the process of evaluating areas for ORV use designations. ORV use as a means of access to remote areas or for the enjoyment of driving and sightseeing may occur over most of 552,000 acres of BLM lands in White Pine County and on the existing trails over the 169 acres of the U.S. Forest Service.

The U.S. Forest Service maintains 310 mi of hiking trails in White Pine County with an additional 5 mi from private sources (Nevada State Parks, 1977). The BLM maintains 17 mi of ORV trail in the Blue Mass Scenic Area north of Mt. Moriah (Nevada Division State Parks, 1980).

Quality of Life (3.4.4.3.7)

White Pine County is a fairly typical rural Nevada county with a few clear distinctions. While Nevada as a whole has been growing rapidly for the last decade, White Pine County and Ely have not shared in this growth. Along with a decline in their labor force, they have experienced considerable out-migration in recent years because of mine closures. Housing values are well below the state average and tend to be more owner occupied. In the area of health, White Pine County is slightly below the state and national averages on most indicators, and they are well below average in their number of physicians, having only 0.3/1,000 population compared to the national average of 1.9/1,000 population. Public safety factors show White Pine County to be very similar to national averages for police officers/1,000 population and crime rates, whereas the state statistics, which are dominated by the two urban areas of Las Vegas and Reno, show very high crime rates. Social disorganization indicators reveal the divorce rate to be very high by national averages and in comparison to other rural counties, but low in comparison to the state figure (11.2 compared to 17.9/1,000 population, respectively). The alcoholism rate of 38.3/1,000 population is very near the national average of 42.0/1,000, while it is well below the state average of 67.7/1,000 population. The suicide rate is 60/100,000 population, compared with a state mean of 26.7/100,000.

Indicators for the education component show White Pine County to be similar to rural Nevada counties. The pupil/teacher ratio is similar to the state average, while the median school years completed of 12.2 is slightly below the state average of 12.6.

A recently completed survey by the Governor's Commission on the Future of Nevada provides additional information on local values, desires, and the perceptual aspects of community facilities such as education, health, economic growth, public service variables, lifestyle factors and others.

Open spaces, relaxed lifestyles, and clear air are the three values most cited by county residents as to what it is that they like about living in Nevada. Over 80 percent report a willingness to alter their lifestyle by riding a bus to work and having an increased population. Changes in lifestyle which are least acceptable include reduced access to the out-of-doors, reduced hunting and fishing, and an increase in federal regulations. White Pine residents further cite unemployment/economic development, federal government regulation, and lack of industry/economic diversity as the most important problems facing their area. In addition, 86 percent felt that growth (more people) would be beneficial to their community, 73 percent were not pleased with their lack of growth over the last few years, and 86 percent felt that it was "of major importance" to develop sources of employment other than gaming. Their preferences for future growth include expansion in mining, power plants, and agriculture.

Of the amenities available to the local community as public services, a majority of the White Pine County residents who returned questionnaires to the commission preferred that future spending remain the same for arts and culture, fire protection, and services to economically disadvantaged and handicapped. A majority preferred that support should be greater for streets and highways, transportation other than highways, primary and secondary education, services to senior citizens, and colleges and universities. Support for parks and recreation and land use planning was closely divided between those preferring to spend more and those satisfied with current levels of expenditures; low-cost housing had a nearly even response. Public transit was clearly seen as inadequate, whereas health services were perceived as adequate by a majority of the respondents. In the area of government and planning, community planning of land uses was agreeable to the majority.

School districts and educational institutions received mixed evaluations in terms of their adequacy in preparing students for the future. Nevada universities and community colleges were seen as more adequate than the local school district, where respondents were sharply divided about its adequacy in preparing students for the future. In a related opinion, 88 percent of White Pine respondents thought that state-supported higher education should provide more vocational training.

In summary, Ely and White Pine County are typical rural Nevada areas with the exception that they have suffered severe economic and population decline from closing copper mines. This experience has disposed them to look favorably at projects that could reverse the decline experienced during the 1970s. A clear majority of residents favor further economic and industrial diversification and moderate population growth. This endorsement of growth is tempered by their strong opposition to increased federal regulations and endorsement of such rural values as love for open space, clean air, and relaxed lifestyles.

Traffic and Transportation (3.4.4.3.8)

The proposed base site is 10 miles south of Ely on the Pioche Highway (U.S. 50 and 93). A map of the existing road network around Ely with 1978 traffic volumes is

shown in Figure 3.4.4.3-1. Major roadways in the area are U.S. Highway 6, 50, and 93, and State Highway 893. The Pioche Highway south of Ely currently has an average daily traffic of 820 vehicles.

Ely is served by the Nevada Northern Railroad, a narrow gauge line running north, connecting with the Western Pacific Railroad near Shafter, Nevada. Limited commercial airline service is available at Ely.

Energy (3.4.4.3.9)

Ely has no natural gas service. Service could be extended into the area by Southwest Gas Corporation (SGC) in Las Vegas, but there are presently no plans for such an extension. The closest point on the SGC distribution system is approximately 125 mi north-northwest of Ely in the Elko area. There is a possibility that the proposed Rocky Mountain Pipeline for natural gas may pass near Ely.

Home energy requirements in Ely are supplied by bottled gas, fuel oil, and electricity. Bottled gas, fuel oil, gasoline and diesel fuel are trucked from bulk fuel handling terminals in Salt Lake City and Las Vegas to local distribution centers. The bottled gas (propane) is marketed locally by three companies.

Electrical energy to the Ely area is supplied by Mt. Wheeler Power, Inc., a Rural Electric Cooperative with a peak system demand of approximately 25 MW. Mt. Wheeler Power has no generating facilities and relies on purchased power transmitted from other utilities via transmission lines. At present the transmission line capacity in the area is limited and the availability of additional transmission facilities is questionable.

Land Ownership (3.4.4.3.10)

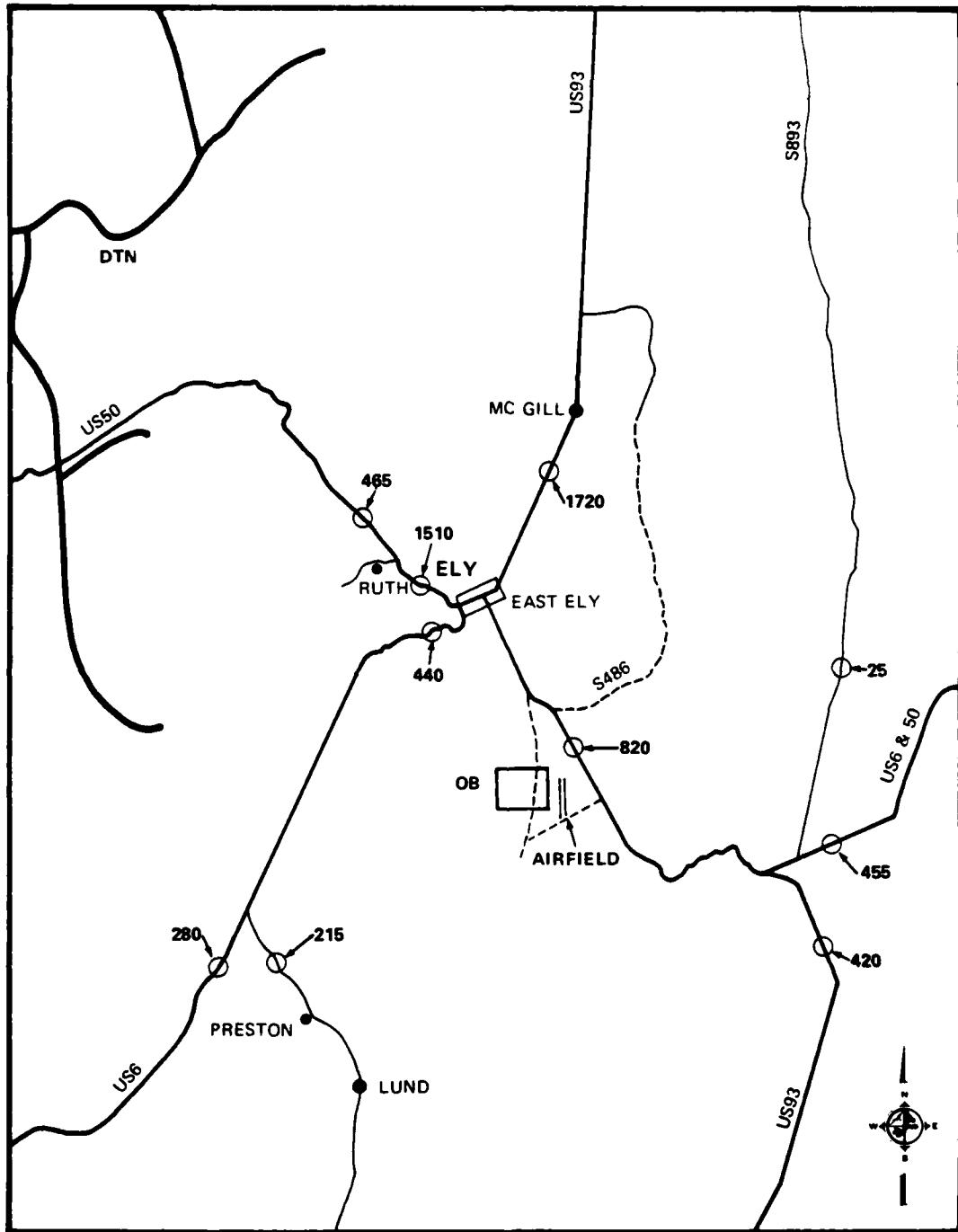
Much of the BLM-administered land in the Ely area is utilized for cattle grazing, and conflicts over land uses with area cattle ranchers could result. The site is located between a portion of the Humboldt National Forest immediately to the west, and approximately 5,400 acres of private land about 5 mi to the east and northeast in Steptoe Valley. There are also four parcels of private land between 4 and 5 mi to the south and southwest, which comprise 1,500 acres.

Land Use (3.4.4.3.11)

White Pine County encompasses 5,699,000 acres, and over 90 percent is open space and agricultural.

Agriculture

No irrigated croplands are located near the proposed OB facilities at Ely, Nevada, which lies in the northern portion of the BLM Horse and Cattle Camp Planning Unit. The predominant land use in the vicinity of the OB facilities is grazing.



LEGEND 000 - 1979 TRAFFIC VOLUMES; ELY, NEVADA

SCHEMATIC: NOT TO SCALE

SOURCE: NEVADA DEPARTMENT OF TRANSPORTATION

2179-A

Figure 3.4.4.3-1. Existing traffic volumes in the vicinity of Ely, Nevada.

Recreation

No fishing or concentrated recreation sites are located in the vicinity of the proposed OB site. Being entirely in public domain, this area is subject to recreational vehicle use, small game hunting, dispersed recreation, and collecting activities.

Mining

The site is about 4 mi from the 480 acre Ward mining district and is completely covered with mining claims and oil and gas leases. Claims in the western portion are owned by Silver King Mines, which has a producing operation west of the site. Placer claims dominate the eastern portion of the site. No known oil and gas exploration has been performed in this area.

The communities of Ely, Ruth, and McGill are within 18 mi of each other, but only Ely is incorporated. The White Pine Planning Commission directs the local planning activities. Urban land area in Ely comprises 2,080 acres, in McGill, 462 acres, and in Ruth, 223 acres. Ely's dominant land uses are undeveloped and open space, 37 percent; streets and railroads, 24 percent; and single family residential, 21 percent. McGill has 37 percent single-family residential, 24 percent streets and railroads, and 17 percent undeveloped and open space. Urban land in White Pine County is surrounded by BLM-administered public land.

Native Americans (3.4.4.3.12)

Ely and vicinity was a major Shoshone occupation area in late prehistoric and early historic times. Nineteenth century Indian villages are recorded for Ely, Duck Creek, Warm Springs, Schellbourne, Egan Canyon, and Cherry Creek. Additionally, the Ely, Duck Creek, and Cherry Creek villages served as festival centers in historic times. A total of 20 known aboriginal habitation sites occur in the Steptoe Valley unit. This undoubtedly represents only a small fraction of potential sites. The unit contains 225 springs, a large number of which are likely to be associated with sensitive cultural materials.

Due to the formerly dense Shoshone occupation of the Ely area, extensive burial grounds are expected in the foothill and mountain areas. Nine caves and natural rock shelters are recorded, one of which is associated with rock art. The Egan and Schell Creek Ranges which flank the Steptoe Valley also contain extensive pinyon groves. Pine-nuts continue to be harvested annually by contemporary Native American Indians in the area, and constitute a valuable cultural resource.

There are two Shoshone Indian reserves in the general Ely vicinity the Ely Colony and the Duckwater Reservation. The Ely Colony consists of 103 owned acres located in the town of Ely and has an enrolled population of 187. The Duckwater Reservation consists of 3,815 tribally owned acres 70 mi southeast of Ely and has an enrolled population of 124.

The combined Indian labor force for the Duckwater Reservation and Ely Colony is estimated to be 75 men and women of whom 47, or 62 percent, are unemployed. Of the 29 employed Indians, 21, or 72 percent, earn under \$5,000/year. The average per capita income for the Duckwater reservation and the Ely Colony is \$700/year and the average family income is \$3,200-\$3,500/year.

Although Steptoe Valley is known to have been a Shoshone population center, little is known about late prehistoric and early historic settlements south of the Ely area. Archaeological sites of undetermined antiquity are found along the numerous springs which occur in the Egan and Schell Creek Ranges. Historic Shoshone settlements are especially likely along Steptoe Creek, just west of the proposed base area. Culturally sensitive burial and spiritual sites are expected in foothill and mountain regions. Detailed and reservation-specific data on cultural resources, land use, water resources and use, demographic characteristics, employment, income and tribal enterprises, community and social structure, and other socioeconomic variables are being collected by a field research team.

Archaeological and Historical Resources (3.4.4.3.13)

Three known archaeological sites located within the proposed area of the Ely alternative, and adjacent to this area on the west, are the Ward Charcoal Ovens National Register Site. The archaeological sites represent limited activity sites, primarily lithic scatters whose precise functions are not yet determined. Ward Charcoal Ovens are comprised of six stone beehive ovens where timber was reduced for the smelters of Ward, a mining town dating to 1897. Nearly 74 percent of the land within a 20 mi radius of the proposed Ely OB is of predicted high or moderate sensitivity.

Paleontology

Along the edge of Steptoe Valley between Ely and the proposed operating base are outcrops of the Sheep Pass Formation. Some of these outcrops contain fossils, and one vertebrate fossil has been found. Paleozoic rocks outcropping in the mountain ranges east and west of the valley contain an assortment of fossils.

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Milford



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MILFORD (3.4.5)

Introduction (3.4.5.1)

The area of analysis (AOA) for the Milford operating base includes Beaver County. The AOA is located in the central section of the designated region of influence (ROI) as shown in Figure 3.4.5.1-1. Milford and Beaver are the major settlements in the AOA. This section and Chapter 4 detail important environmental characteristics of Milford and vicinity and the proposed base site, respectively.

Beaver county's first settlement was Beaver, founded in 1856 as a Mormon colony. Beaver County economic development in the 19th century followed the same trend as in other Utah study area counties, early settlement by Mormon colonists followed by the discovery of precious metals, creating mining boom towns. Today, Beaver's economy is dominated by agriculture, including livestock and dairy. Minerals extraction and primary processing are important, including alunite, and gravel, perlite, molybdenum, and geothermal steam.

Other Projects

While economic growth has been relatively slow, expansion of mineral production and the development of energy resources are forecast for the county in the near future. Geothermal energy exploration and construction of a 20-MW plant at Roosevelt Hot Springs is expected to increase county employment levels by about 100 beginning in 1980 and continuing through 1994. The second major project forecast--the Pine Grove Molybdenum Project (PGMP)--includes mining and milling of 10,000-30,000 tons of ore per day. PGMP will employ about 500 workers beginning in 1982 increasing to around 700 in 1984 and continuing at that level through 1994. Alunite mining and processing is the third major project scheduled in Beaver County. About 1,000 workers would be employed in mining, milling and processing 12,000 tons of ore per day beginning in 1986 and continuing through 1994. Employment growth in the mining and energy industries will spur additional growth in other industries in the county. The trade, services and construction sectors will receive much of this induced employment.

Table 3.4.5.1-1 presents employment projections over the 1980-1994 period for Beaver County. These forecasts have been separated into Baseline 1 and Baseline 2. The first set of projections are essentially an extrapolation of 1967-1978 growth trends in Beaver County. Baseline 2 includes Baseline 1 growth plus the Roosevelt Hot Springs geothermal power project, PGMP and alunite mining and processing. These projections have been developed by the Universitiy of Utah's Bureau of Business and Economic Research (BBER). They project employment by place of residence and not by place of work, as in Tables 3.4.5.1-2 and 3.4.5.1-3. In the case of Beaver County, some people living in the county work elsewhere, thereby increasing BBER's employment figures. In comparison to the 1977 employment figure of 1,726 presented in Tables 3.4.5.1-2 and 3.4.5.1-3, employment by place of residence for this same year equals 1,740 jobs (Utah Department of Employment Security, 1980). Employment by place of residence for 1978 and 1979 equals 1,910 and 1,960, respectively. Forecasts for both baselines project a decline in employment by place of residence to 1,469 (Baseline 1) and 1,635 (Baseline 2) in 1980. Under Baseline 1 conditions, subsequent to 1980, employment is forecast to increase

Figure 3.4.5.1-1. Area of Analysis (AOA) for the Milford vicinity.

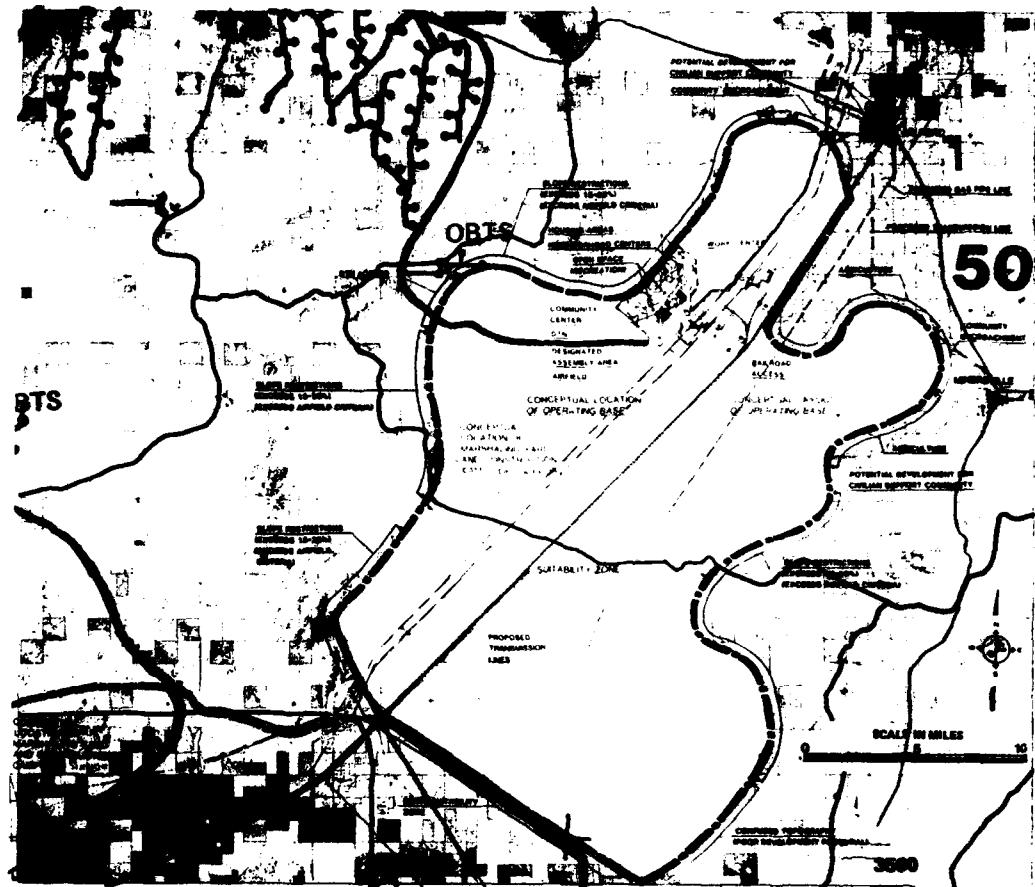


Table 3.4.5.1-1. Projected employment by major industrial sector,
Beaver County, 1980-1994.

BEAVER COUNTY	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Baseline 1															
Agriculture	26	27	27	27	27	27	28	28	28	28	28	28	28	29	29
Mining	15	46	47	48	50	51	52	54	55	56	58	59	61	62	64
Construction	54	55	58	60	63	65	67	68	69	70	72	74	75	76	79
Manufacturing	124	127	131	134	138	141	144	147	149	152	156	158	162	165	169
Transport, Communi- cations, Utilities	198	204	210	217	223	232	237	243	249	255	261	268	275	282	289
Wholesale & Retail Trade	350	360	372	384	397	410	417	424	430	437	443	451	458	466	474
Finance, Insurance, Real Estate	31	32	34	36	37	38	39	39	41	42	42	43	43	44	44
Services	212	222	231	242	255	268	274	279	284	291	296	302	309	316	322
Government	353	359	366	374	382	389	394	396	399	402	405	408	410	413	415
Non-farm Proprietors	75	77	80	83	85	88	90	91	91	92	94	95	96	97	98
Total	1,469	1,511	1,555	1,605	1,657	1,712	1,741	1,768	1,796	1,825	1,854	1,886	1,918	1,950	1,980
Baseline 2															
Agriculture	26	27	28	29	30	30	32	31	30	31	31	31	31	32	32
Mining	164	130	528	629	806	803	804	805	1,806	1,807	1,809	1,810	1,812	1,813	1,815
Construction	57	108	293	1,076	1,322	1,703	2,050	1,189	144	146	144	152	153	162	159
Manufacturing	124	127	135	140	147	152	156	156	158	162	165	168	171	174	178
Transport, Communi- cations, Utilities	199	205	223	234	244	254	262	262	268	274	281	287	295	303	310
Wholesale & Retail Trade	364	374	457	556	622	666	722	631	638	650	659	674	686	699	704
Finance, Insurance, Real Estate	34	35	54	74	88	98	109	90	92	93	90	96	96	97	100
Services	223	236	313	411	472	554	593	498	499	504	527	530	549	550	568
Government	361	370	423	484	532	581	603	543	538	555	562	564	567	580	585
Non-farm Proprietors	90	93	116	149	172	187	210	175	175	171	176	181	181	186	187
Total	1,635	1,700	2,669	3,783	4,134	5,020	5,542	4,379	4,348	4,395	4,443	4,492	4,541	4,595	4,636

Source: Bureau of Business and Economic Research, University of Utah, 1980.

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Table 3.4.5.1-2. Total employment and percent share by major economic sectors for selected counties in Utah, 1977.

COUNTY	TOTAL EMPLOYMENT 1977	PERCENT OF TOTAL STATE EMPLOYMENT	AGRICULTURE SHARE (%)	MINING SHARE (%)	CONSTRUCTION SHARE (%)	MANUFACTURE SHARE (%)	SERVICES SHARE (%)	GOVERNMENT SHARE (%)
Beaver	1,726	0.3	18.2	1.3	2.6	8.6	(D)	20.4
Davis	50,061	9.1	2.2	0.1	4.6	9.3	9.2	51.1
Iron	6,517	1.2	9.4	3.9	5.0	6.2	9.8	26.7
Juab	2,150	0.4	13.2	(D)	(D)	25.8	7.3	20.7
Millard	3,416	0.6	30.9	1.8	1.2	6.8	6.4	21.4
Salt Lake	272,043	49.4	0.5	2.3	5.9	13.9	16.8	17.3
Tooele	10,959	2.0	3.1	0.6	10.0	9.7	4.5	57.1
Utah	59,393	10.8	4.6	7.0	6.1	20.0	20.6	16.6
Washington	6,365	1.2	6.9	0.4	7.0	7.9	11.9	21.4
Weber	49,011	8.9	2.3	0.1	4.8	11.4	14.5	30.2
Utah State Total	550,214	3.7	2.7	5.8	13.5	14.7	23.2	
U.S. Total	97,898,874	4.2	4.2	4.0	20.1	17.4	18.2	060

(D) Not shown to avoid disclosure of confidential data.

Source: Bureau of Economic Analysis, April 1979.

Table 3.4.5.1-3. Employment growth by sector, selected counties in Utah, 1967 to 1977.

COUNTY	TOTAL		AGRICULTURE		MINING		CONSTRUCTION		MANUFACTURING		SERVICES		GOVERNMENT		
	1967	1977	1967	1977	A	1967	1977	A	1967	1977	A	1967	1977	A	
Beaver	1,625	1,726	0.6	340	312	-0.9	(D) ²	2.3	(D)	45	(D)	149	(D)	120	(D)
Davis	40,034	50,061	2.3	1,231	1,084	-1.3	49	14	-11.8	710	2,323	12.6	3,122	4,662	4.1
Iron	4,409	6,517	3.8	671	610	-0.9	244	255	0.4	176	327	6.4	270	405	4.1
Juab	2,116	2,150	0.2	343	284	-1.9	198	(D)	(D)	(D)	(D)	436	554	2.4	97
Millard	2,446	3,416	1.5	1,073	1,055	-0.2	(D)	62	(D)	52	42	-2.1	61	232	14.3
Salt Lake	180,651	272,043	4.2	1,604	1,443	-1.1	5,418	6,263	1.5	7,148	16,143	8.5	21,832	37,817	3.9
Tooele	11,514	10,059	-0.5	347	341	-0.2	116	70	-6.4	195	1,094	18.8	554	1,066	6.8
Utah	37,804	59,393	4.6	3,192	2,708	-1.6	225	417	6.4	1,543	3,620	8.9	8,317	11,894	3.6
Washington	3,950	6,165	4.9	579	442	-2.7	(D)	28	(D)	195	444	8.6	187	603	10.4
Weber	44,667	49,011	0.9	1,335	1,147	-1.5	17	49	11.2	1,523	2,344	4.4	4,855	5,590	1.4
State Total	391,289	560,214	3.5	23,091	20,244	-1.3	10,330	14,825	3.7	13,676	31,814	8.8	50,216	73,997	4.0
U.S. Total (in millions)	82.5	97.8	1.7	4.6	4.2	-1.2	.6	.8	3.0	3.3	3.9	1.6	19.5	19.7	0.1
													12.7	17.0	1.0
													13.0	13.0	1.0
													17.8	2.5	

¹A = Average annual growth rate.

²(D) = Not shown to avoid disclosure of confidential information.

Source: BEA, April, 1979.

(b6)

at an annual average rate of 2.2 percent over the 1980-1994 period, while the total number of jobs are forecast to increase by 511. Baseline 2 employment is slightly higher than Baseline 1 in 1980 and experience sharp increases between 1982 and 1986. The average annual growth rate between 1980 and 1986 is 22.6 percent due mainly to large employment increases in the mining and construction sectors. However, under Baseline 2, between 1986 and 1988, an estimated 1,996 construction jobs will be eliminated causing a reduction in over-all county employment of 11.4 percent per year. About 1,000 additional alunite mining jobs, projected to begin in 1988, will relieve some of the economic strain that would be created by construction lay-offs. After 1988, Beaver County employment is forecast to grow very slowly at about 1.1 percent per year through 1994 under Baseline 2. The mining and energy projects would very likely induce significant stress on the county's economy as industries adjust; local labor shortages and surpluses, wage inflation, and immigration of new workers in key occupations would occur, but would be replaced by unemployment problems until the county readjusts.

Natural Environment (3.4.5.2)

Groundwater (3.4.5.2.1)

Groundwater recharge results from seepage of intermittent streamflow from the surrounding mountains and foothills and infiltration from irrigation ditches and fields. The annual discharge loss via wells and evapotranspiration exceeds the perennial yield. The water level has declined 30 ft from 1950 to 1974. No water is available in the area and the Utah State Engineer is not approving new appropriation applications.

Surface Water (3.4.5.2.2)

The principal source of surface water is the Beaver River and essentially all its water originates outside the valley. The river channel is generally dry before it reaches Milford because the stream flow is directed elsewhere for irrigation. Rocky Ford Dam controls the flow of the Beaver River for irrigation and stock watering. Of at least 33 springs in the Milford area, the only spring discharging from the principal groundwater reservoir during 1970-71 was Thermo Hot Springs.

Air Quality (3.4.5.2.3)

Particulate emissions at Milford, excluding windblown sources, are reported as 2,088 tons/yr. Particulate and gaseous emissions are listed in Table 3.4.1.2-2 Measured air quality data are not available.

Biological Resources (3.4.5.2.4)

Vegetation And Soils

Several soil associations are present. A predominant association is made up of Aridisols, primarily deep, moderately to very strongly alkaline soils. Surface layers are loams, silt loams, and silty clay loams, and the subsoils are fine and fine loamy. Permeability is moderately slow to very slow and slopes are smooth to gently undulating (from less than 1 percent up to 3 percent). On the alluvial fans and low terraces soils are deep and mildly to strongly alkaline. The surface layers are

loams, silt loams, and sandy loams and the subsoils loamy skeletal, fine loamy, fine silty and sandy. Slopes range from smooth to gently undulating to rolling (from less than 1 percent to nearly 30 percent).

The vegetation of Milford Valley is typical of valley vegetation of the Escalante Desert, of which this valley is the northern extent (Fig. 3.4.5.2-1). Saltmarsh vegetation occurs in at least three isolated areas south of Milford and in a larger continuous area in the Beaver Bottoms area north of Milford. Riparian woodland, characterized by a moderately sparse growth of deciduous trees, is found along the Beaver River north of Minersville. Alkali sink scrub, a vegetation type typical of heavy, saline soils, border saltmarsh vegetation, with a transition zone in which some characteristic species of both vegetation types occur together. The northern extent of the valley has large expanses of alkali sink scrub on the broad valley floor. Shadscale scrub is extensive in the northern end of the valley and occurs as a number of subtypes within the proposed OB site. This vegetation type and its associated subtypes are much more extensive than any of the other vegetation types of the valley floor with transition zones from alkali sink scrub and into Great Basin sagebrush. Approximately two-thirds of the proposed OB site is within a shadscale subtype dominated by rabbitbrush.

In the upper bajadas, Great Basin sagebrush predominates as a narrow band below pinyon-juniper woodlands. This vegetation type is in greatest abundance around the Milford area. Great Basin sagebrush is limited in extent above the 5,200 ft elevation in the OB site area, and is typically found on deep, permeable, nonsaline soils of the alluvial fans and bajadas slopes. Pinyon-juniper woodland occurs above Great Basin sagebrush on the east and west sides of the valley. This woodland type is composed of small evergreen trees, of open canopy, with an understory of big sagebrush.

Scattered throughout the valley floor and bajadas are isolated bunch grass areas. Based upon the configuration of the identified areas and the range practices in this region, it is assumed that these areas represent successful range conversions to either native or non-native bunch grass dominance.

Wildlife

The site is in pronghorn antelope range. Mule deer are in the mountains of this area, although their numbers are low. Sage grouse occur approximately 8-10 mi east of this base site. Ten to 15 mi to the east is Minersville Lake State Park, a major waterfowl area.

Aquatic Species

No game fishing areas are in the Milford watershed. The adjacent Beaver watershed, 10 to 30 mi southeast of Milford, has game fish habitats in Beaver River drainage and Minersville Reservoir.

Protected Species

A bald eagle roost site is a few miles east of Minersville Lake State Park in the Black Mountains and another 10 mi northwest of the site in Wah Wah Valley. A major transplant site of the federally-listed endangered Utah prairie dog is located

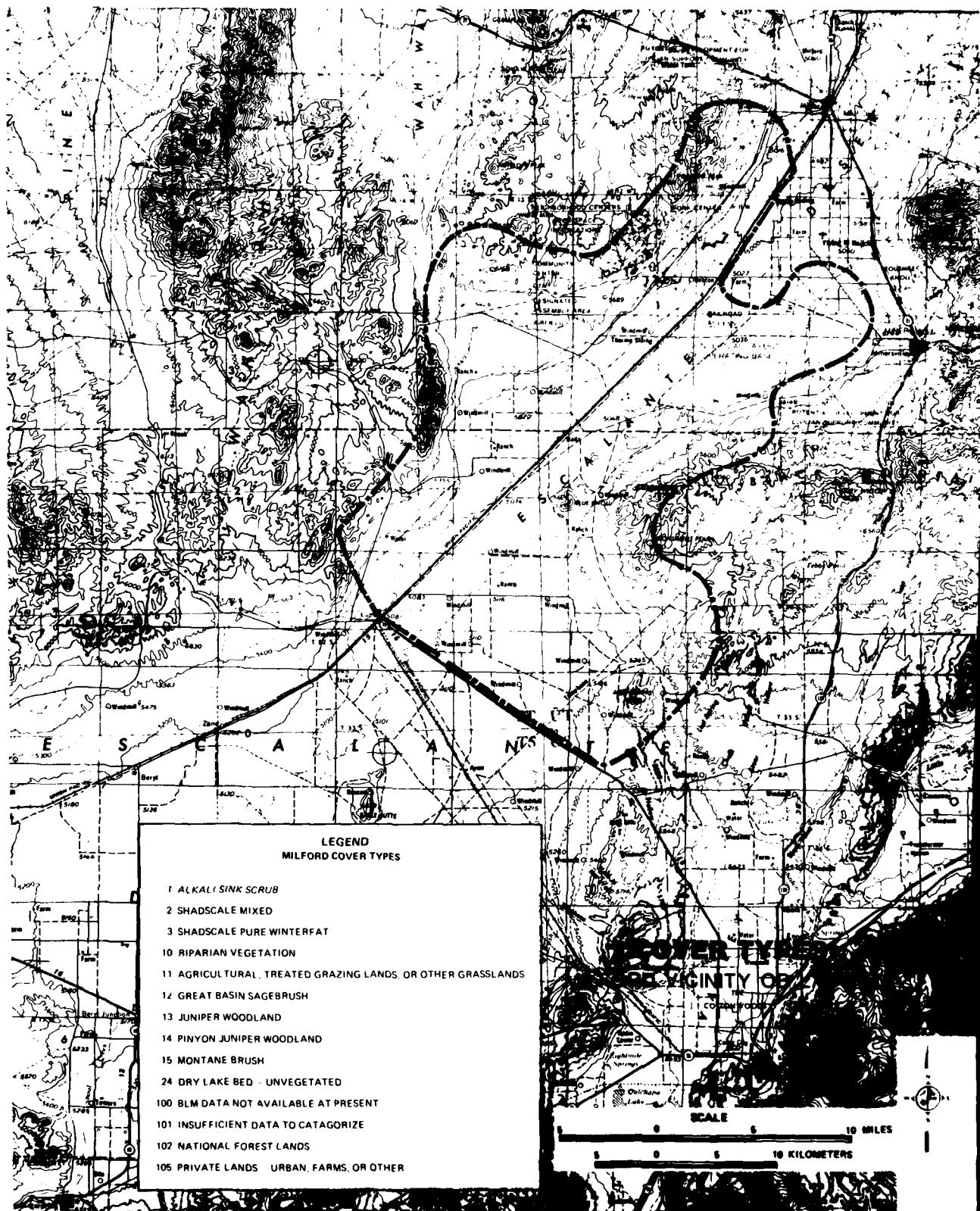


Figure 3.4.5.2-1 Vegetation cover types in the vicinity of Milford

in Pine Valley. Two plant species, recommended for threatened status, are found just north of Milford: the dwarf beard-tongue (*Penstemon nanus*) and the tufted globe mallow (*Sphaeralcea caespitosa*). Two populations of the Tunnel Springs beard-tongue (*Penstemon concinnus*) lie about 10 mi to the west of the road to the DDA. Six additional species are known in the Wah Wah Mountains and the San Francisco Mountains.

Wilderness and Significant Natural Areas

Recommended and designated wilderness study areas as well as significant natural areas located within a 50 mi radius of Milford are listed in Table 3.4.5.2-1.

Human Environment (3.4.5.3)

Employment (3.4.5.3.1)

Tables 3.4.5.3-1 and 3.4.5.3-2 highlight detailed employment characteristics of Beaver County. The first table indicates the relative dependence on only two sectors--government, comprising 20 percent of total employment in 1977, and agriculture, the source of 18 percent of 1977 county employment. The mining, construction and manufacturing employment shares were well below the state and national averages in 1977. The employment share for the services sector was not shown to avoid disclosure of confidential data.

Table 3.4.5.3-1 presents 10-year employment growth figures and indicates Beaver County has grown very little; employment increased by only 190 jobs between 1967 and 1977. Disclosure rules prevent complete analysis, however available data shows that the government sector kept pace with the average annual growth of the state and national government sectors. Agriculture in Beaver County posted an average annual decline of almost one percent between 1967 and 1977, similar to the declining agricultural employment trend in Utah and the United States.

The baseline labor force for Beaver County is shown graphically from 1960-1994 in Figure 3.4.5.3-1. The amount of workers in the labor force has remained between 1,800 and 2,000 for most of the 1960-1980 period. The county labor force dropped below 1,800 in 1969 and remained under that mark until 1973. In 1978 and 1979 the labor force broke 2,000 but dropped to 1,916 in 1980. Labor force projections from 1980 to 1994 in Beaver County are dependent on the amount of growth that occurs during that period. Two projections - high growth and trend growth - show two distinctly different economic futures for the county. Trend growth assumes that no major projects will be undertaken in the county over the 1980-1994 period and projects the labor force to increase to about 2,500 by 1994. High growth assumes that several major projects will induce additional workers into the county. With these other projects, the labor force is projected to reach 5,500 workers by 1986 and then drop below 5,000 during the late 1980s.

The baseline unemployment rate in Beaver County is shown graphically from 1960 to 1994 in Figure 3.4.5.3-2. The rate of unemployment has tended to decrease over the 1960-1980 period. In the early 1960s, the rate was around 8.5 percent and

Table 3.4.5.2-1. Potential wilderness and significant natural areas within a 50 mi (80 km) radius from the proposed Milford OB site, Utah.

AREA	MILES FROM OB SITE	KM FROM OB SITE
Potential Wilderness Areas		
White Rock Range	43	69
Wah Wah Mountains	30	48
Wah Wah Mountains	35	56
Cedar Breaks National Monument	40	64
Cedar Breaks	38	61
Spring Canyon	48	77
Taylor Creek Canyon	50	80
La Verkin Creek Canyon	50	80
King Top	48	77
Significant Natural Areas		
Steamboat Mountain	25	40
Indian Peak Wildlife Management Area	29	47
Gleason Canyon	50	80
Cedar Breaks	40	64
Deer Habitat Management Area	31	50
Desert Range Experiment Station	40	64

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Table 3.4.5.3-1. Total employment and percent share by major economic sectors for selected counties in Utah, 1977.

COUNTY	TOTAL EMPLOYMENT 1977	PERCENT OF TOTAL STATE EMPLOYMENT	AGRICULTURE SHARE (%)	MINING SHARE (%)	CONSTRUCTION SHARE (%)	MANUFACTURE SHARE (%)	SERVICES SHARE (%)	GOVERNMENT SHARE (%)
Beaver	1,726	0.3	18.2	1.3	2.6	8.6	(D)	20.4
Davis	50,061	9.1	2.2	0.1	4.6	9.3	9.2	51.1
Iron	6,517	1.2	9.4	3.9	5.0	6.2	9.8	26.7
Juab	2,150	0.4	13.2	(D)	(D)	25.8	7.3	20.7
Millard	3,416	0.6	30.9	1.8	1.2	6.8	6.4	21.4
Salt Lake	272,043	49.4	0.5	2.3	5.9	13.9	16.8	17.3
Tooele	10,959	2.0	3.1	0.6	10.0	9.7	4.5	57.1
Utah	59,393	10.8	4.6	7.0	6.1	20.0	20.6	16.6
Washington	6,365	1.2	6.9	0.4	7.0	7.9	11.9	21.4
Weber	49,011	8.9	2.3	0.1	4.8	11.4	14.5	30.2
Utah State Total	550,214		3.7	2.7	5.8	13.5	14.7	23.2
U.S.	97,898,874		4.2	4.2	4.0	20.1	17.4	18.2

060

(D) Not shown to avoid disclosure of confidential data.

Source: Bureau of Economic Analysis, April 1979.

Table 3.4.5.3-2. Employment growth by sector, selected counties in Utah, 1967-1977.

COUNTY	TOTAL		AGRICULTURE		MINING		CONSTRUCTION		MANUFACTURING		SERVICES		GOVERNMENT			
	1967	1977	A ¹	1967	1977	A	1967	1977	A	1967	1977	A	1967	1977	A	
Browne	1,625	1,726	0.6	340	312	-0.9	(D) ²	23	(D)	45	(D)	109	(D)	129	(D)	
Burns	40,034	50,061	2.3	1,231	1,084	-1.3	46	14	-11.8	710	2,323	12.6	3,122	4,662	4.1	
Iron	4,419	6,517	3.8	671	610	-0.6	244	255	0.4	176	327	6.4	270	405	4.1	
Juab	2,116	2,150	0.2	343	284	-1.9	198	(D)	(D)	(D)	436	554	2.4	158	197	2.7
Millard	2,944	3,416	1.5	1,073	1,055	-0.2	(D)	62	(D)	52	42	-2.1	61	242	14.3	
Salt Lake	180,651	222,983	4.2	1,604	1,443	-1.1	5,418	6,263	1.5	7,148	16,143	8.5	20,832	37,812	3.9	
Tonalee	11,514	10,950	-0.5	347	341	-0.2	136	70	-6.4	195	1,094	18.8	154	1,066	6.8	
Utah	37,804	53,393	4.6	3,192	2,708	-1.6	225	417	6.4	1,543	3,620	8.9	8,317	11,890	3.6	
Washington	3,150	6,365	4.9	570	442	-2.7	(D)	28	(D)	195	444	8.6	187	503	10.4	
Weber	44,667	49,011	0.9	1,335	1,147	-1.5	17	40	11.2	1,523	2,304	4.4	4,935	5,530	1.4	
State Total	391,289	550,214	3.6	23,001	20,744	-1.3	10,330	14,825	3.7	13,676	31,814	8.8	50,216	73,917	4.0	
U.S. Total (in millions)	82.5	97.8	1.7	4.6	4.2	-1.2	.6	.8	3.0	3.3	3.9	1.6	19.5	19.7	4.3	

¹ Average annual growth rate.

² (D) = Not shown to avoid disclosure of confidential information.

Source: BEA, April, 1979.

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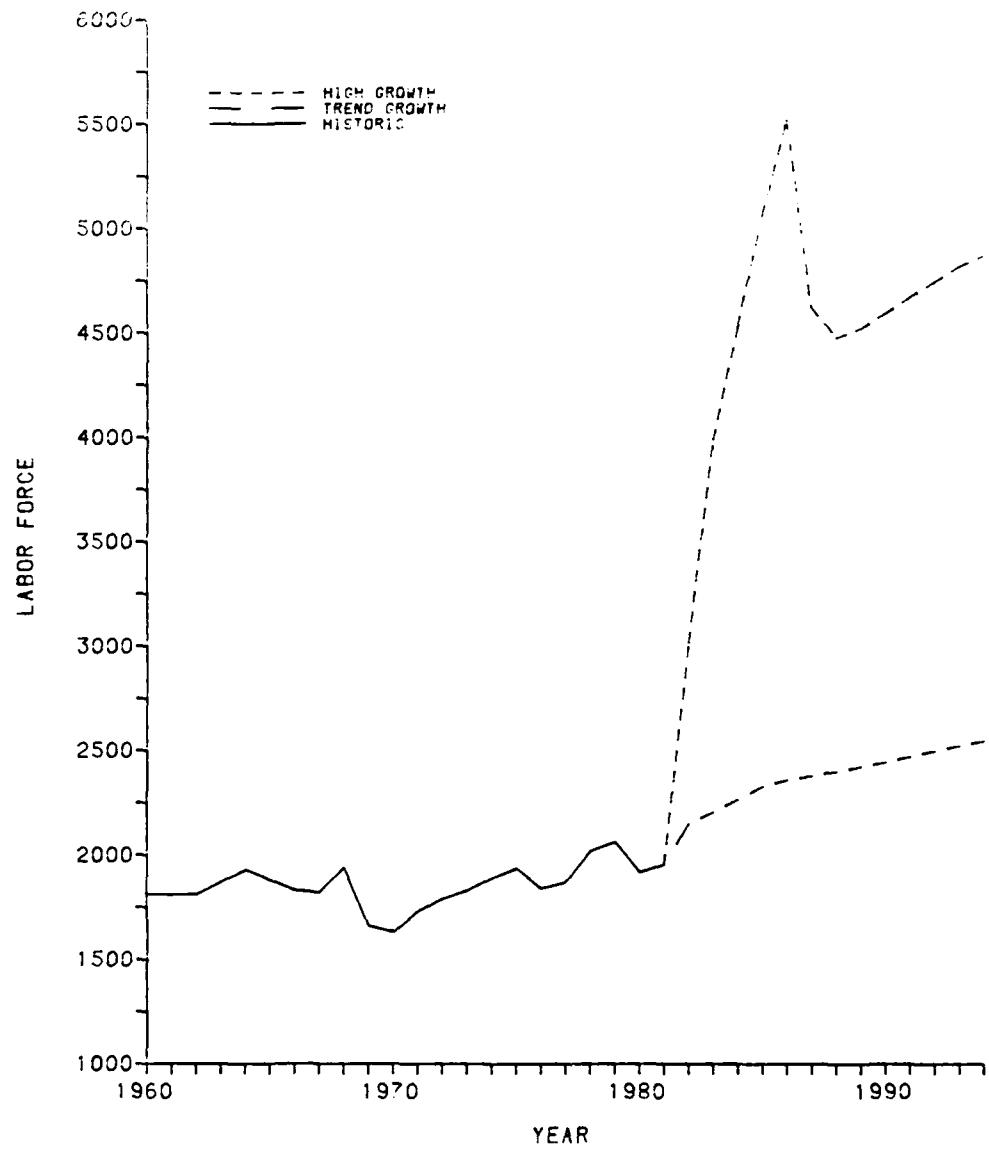


Figure 3.4.5.3-1. Historic and projected baseline labor force in Beaver County.

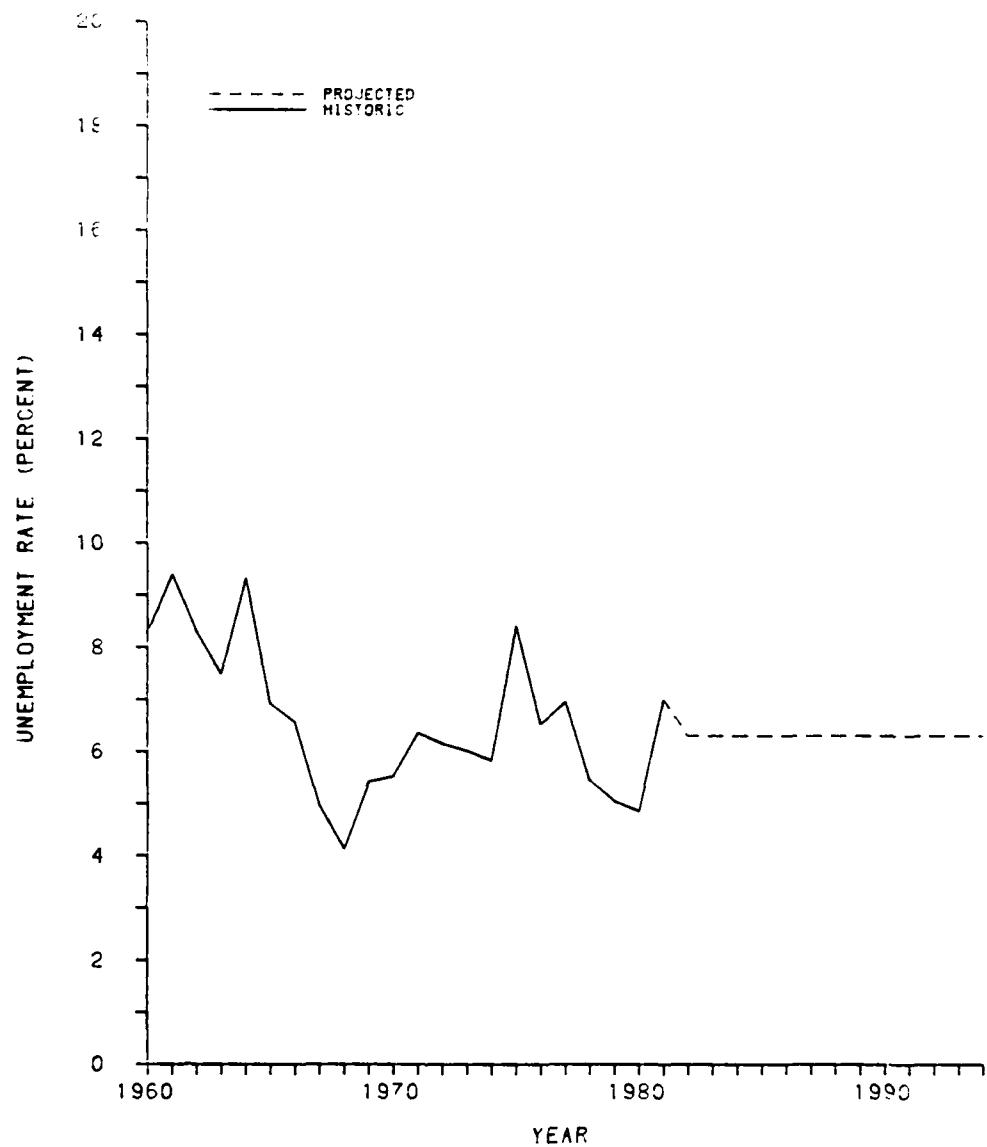


Figure 3.4.5.3-2. Historic and projected baseline rate of unemployment in Beaver County.

dropped to about 5 percent in the late 1960s. It is projected to rise to around 6 percent in 1981 and remain at that level through 1994.

Income and Earnings (3.4.5.3.2)

Consistent with a constant employment level, total earnings exhibited very little growth over the 1967-1977 period. Table 3.4.5.3-3 highlights Beaver County earnings by industrial sectors relative to other counties in Utah, and it adjusts for inflation by placing all figures in 1977 dollars. It indicates that the county's 1977 total earning of \$13.9 million were only one-fifth of one percent of the state's total. Further, Beaver County earnings growth was less than one-eighth that for Utah and one-fifth that for the United States over the 1967-1977 period. Disaggregating earnings by industry, the same pattern of negligible growth is observed (where data are available) except in the government sector, where earnings growth exceeded the state annual average and kept pace with the national rate.

Table 3.4.5.3-4 highlights per capita income and earnings shares by major industry in Beaver County. The country's 1977 per capita income of \$5,114 was roughly 86 percent that of Utah's, and 73 percent of U.S. per capita income. By industrial source, government had one-fifth of Beaver County's total 1977 earnings, corresponding to what employment in this industry would have indicated.

Construction and mining earnings shares in 1977 were well above and agriculture's share well below what employment in those industries would have suggested respectively, however it is characteristic for construction workers and miners to earn relatively higher wages than agricultural workers. Beaver County earnings shares in the manufacturing and services sectors were well below half both the state and national shares for those industries in 1977, and this reflects in unimportance of these sectors with respect to the county's economy.

Public Finance (3.4.5.3.3)

Principal local government units are the city of Milford, the county of Beaver, and the Beaver County School District. For both the city of Milford and the county of Beaver, revenue sources are dependent on intergovernmental transfers and less on locally raised revenues. Intergovernmental transfers account for over 60 percent of general fund revenues in Beaver County and 55.9 percent in Milford (County of Beaver, Statement of General Fund Revenues and Expenditures, Fiscal Year 1977; City of Milford Statement of General Fund Revenues and Expenditures, 1977). Expenditure patterns are similar between the two governments, the principal difference being the amount spent on public works. Beaver County's public works are almost one-half of general fund expenditures. Milford's public works expenditures are 28 percent of general fund expenditures, slightly more than 27.7 percent spent on public safety.

Assessed valuations are low. Milford's assessed valuation is almost \$2.1 million and the county is \$15.2 million (Table 3.4.5.3-5). All jurisdictions have outstanding debts that reduce the reserve bonding capacities. The state provides 65.9 percent of the Beaver County School District's revenues. This aid is over double that which is locally raised (30.8 percent). Maintenance and operation outlays are 80.0 percent of all expenditures. With the low reserve bonding capacities in each jurisdiction, local governments may find it difficult to raise the capital necessary to provide the infrastructure for large in-migrating populations.

Table 3.4.5.3-3. Earnings by economic sector, selected Utah counties, 1967-1977
 (in millions of 1977 dollars).

COUNTY	TOTAL EARNINGS			AGRICULTURE			MINING			CONSTRUCTION		
	1967	1977	GROWTH RATE	1967	1977	GROWTH RATE	1967	1977	GROWTH RATE	1967	1977	GROWTH RATE
Beaver	13,26	13,9	0.5	2.5	.95	-9.2	(D)	.48	(D)	(D)	1,13	(D)
Davis	466.5	602.5	2.6	3,85	3,63	-0.6	.72	.38	-6.2	11,42	10,6	13.2
Iron	39,94	54,18	3.1	5,8	.96	-16.5	3,6	4,03	1.1	2,8	4,52	4.9
Juab	15,96	14,33	-1.1	1,68	.83	-6.8	2,96	.2	-23.6	.46	.41	3.3
Millard	18,43	22,3	1.9	5,8	4,65	-2.2	(D)	.97	(D)	.67	.81	1.0
Salt Lake	1957.3	3108.3	4.7	9,29	7,31	-2.4	83,84	141,69	5,4	120,2	171,3	8.6
Tooele	129.2	142.6	1.0	.65	1,78	10.6	1,95	.43	-14.0	3,13	21,12	21.0
Utah	370.3	640.3	5.6	14,49	9,52	-4.1	3,2	6,6	7.5	24,39	53,2	9.3
Washington	28,36	49,96	5,8	3,25	2,35	-3.2	(D)	.39	(D)	2,55	5,54	8.0
Weber	412.1	412.9	1.3	6,74	2,37	-9.9	.1	1,27	28.9	26,39	36,R	3.4
State	6010.5	8,164.755	4.2	119.2	82.4	-3.6	155.4	310.15	7.2	226.3	642,616	9.1
U.S.	221,344	1,164,755	2.4	31,950.7	26,163	-2.0	9,715.6	10,115	6.4	54,730.6	69,617	7.4
MANUFACTURING												
COUNTY	1967	1977	GROWTH RATE	1967	1977	GROWTH RATE	1967	1977	GROWTH RATE	1967	1977	GROWTH RATE
Beaver	(D)	.96	(D)	.94	.9	0.0	2,29	3,03	2,8			
Davis	41,68	69,88	4.8	20,04	48,38	9.7	343.5	349,67	0.2			
Iron	2,10	3,11	5.4	4,48	6,14	3.2	9,9	15,81	4.6			
Juab	4,53	5,16	1.3	.64	1,13	5,8	2,66	3,08	1.5			
Millard	.52	1.46	10.9	1,44	1,57	0.9	4,67	5,17	1.0			
Salt Lake	141.1	495.5	1,J	297.3	492.3	5,J	301.6	458.4	4.3			
Tooele	1,22	1,793	9.5	1,03	4,06	1,0	104.3	86,14	-1.9			
Utah	119.2	202.0	5.5	16,85	145.3	6,7	58,81	87,6	4.1			
Washington	1,44	5,44	14.1	1,84	1,23	6,6	7,47	11,47	4.3			
Weber	5,76	6,32	1.31	5,36	7,36	2,7	149.2	154.7	0.4			
State	1011.3	4,4	510.	856.5	5,3	110,28	139,30	2,0				
U.S.	260,026	305,747	1.4	145,753	193,246	1.6	151,707	149,370	2.0			
SERVICES												
COUNTY	1967	1977	GROWTH RATE	1967	1977	GROWTH RATE	1967	1977	GROWTH RATE	1967	1977	GROWTH RATE
Beaver	(D)	.96	(D)	.94	.9	0.0	2,29	3,03	2,8			
Davis	41,68	69,88	4.8	20,04	48,38	9.7	343.5	349,67	0.2			
Iron	2,10	3,11	5.4	4,48	6,14	3.2	9,9	15,81	4.6			
Juab	4,53	5,16	1.3	.64	1,13	5,8	2,66	3,08	1.5			
Millard	.52	1.46	10.9	1,44	1,57	0.9	4,67	5,17	1.0			
Salt Lake	141.1	495.5	1,J	297.3	492.3	5,J	301.6	458.4	4.3			
Tooele	1,22	1,793	9.5	1,03	4,06	1,0	104.3	86,14	-1.9			
Utah	119.2	202.0	5.5	16,85	145.3	6,7	58,81	87,6	4.1			
Washington	1,44	5,44	14.1	1,84	1,23	6,6	7,47	11,47	4.3			
Weber	5,76	6,32	1.31	5,36	7,36	2,7	149.2	154.7	0.4			
State	1011.3	4,4	510.	856.5	5,3	110,28	139,30	2,0				
U.S.	260,026	305,747	1.4	145,753	193,246	1.6	151,707	149,370	2.0			
GOVERNMENT												
COUNTY	1967	1977	GROWTH RATE	1967	1977	GROWTH RATE	1967	1977	GROWTH RATE	1967	1977	GROWTH RATE
Beaver	(D)	.96	(D)	.94	.9	0.0	2,29	3,03	2,8			
Davis	41,68	69,88	4.8	20,04	48,38	9.7	343.5	349,67	0.2			
Iron	2,10	3,11	5.4	4,48	6,14	3.2	9,9	15,81	4.6			
Juab	4,53	5,16	1.3	.64	1,13	5,8	2,66	3,08	1.5			
Millard	.52	1.46	10.9	1,44	1,57	0.9	4,67	5,17	1.0			
Salt Lake	141.1	495.5	1,J	297.3	492.3	5,J	301.6	458.4	4.3			
Tooele	1,22	1,793	9.5	1,03	4,06	1,0	104.3	86,14	-1.9			
Utah	119.2	202.0	5.5	16,85	145.3	6,7	58,81	87,6	4.1			
Washington	1,44	5,44	14.1	1,84	1,23	6,6	7,47	11,47	4.3			
Weber	5,76	6,32	1.31	5,36	7,36	2,7	149.2	154.7	0.4			
State	1011.3	4,4	510.	856.5	5,3	110,28	139,30	2,0				
U.S.	260,026	305,747	1.4	145,753	193,246	1.6	151,707	149,370	2.0			

Table 3.4.5.3-4. Per capita income and earnings shares by economic sector, selected Utah counties, 1977.

COUNTY	1977 PER CAPITA INCOME	TOTAL 1977 EARNINGS (\$000s)	AGRI-CULTURE SHARE (%)	MINING SHARE (%)	CONSTRUCTION SHARE (%)	MANUFACTURING SHARE (%)	SERVICES SHARE (%)	GOVERNMENT SHARE (%)
Beaver	\$5,114	\$ 13,900	6.9	3.4	8.2	6.9	5.8	21.8
Davis	5,860	602,505	0.6	0.1	5.6	11.6	8.0	58.0
Iron	4,693	54,175	1.8	7.4	8.4	6.8	11.3	29.4
Juab	3,797	14,328	5.8	4.9	2.8	36.0	7.9	21.5
Millard	3,978	22,296	20.8	4.3	3.6	6.5	7.0	25.0
Salt Lake	6,712	3,108,320	0.2	4.6	8.7	15.9	15.8	14.7
Tooele	5,684	142,636	1.2	0.3	14.8	12.6	2.8	60.4
Utah	4,854	640,317	1.5	1.0	9.2	31.5	22.7	13.7
Washington	4,381	49,961	4.7	0.8	11.0	10.8	14.5	22.9
Weber	6,158	492,894	0.5	0.3	7.5	14.0	14.8	31.4
State	\$5,943	\$6,010,516	1.4	5.2	9.0	16.8	14.2	22.3
United States	\$7,026	\$1,164,755 ¹	2.2	1.6	6.0	26.2	16.6	17.1

¹ (\$millions)

Source: BEA, 1979.

Table 3.4.5.3-5. Assessed valuations, indebtedness limitations and reserve bonding capacities, 1979.

JURISDICTION	ASSESSED VALUE	INDEBTEDNESS LIMITATION	OUTSTANDING G.O. BONDS	RESERVE BONDING CAPACITY
Beaver County	\$15,236,878	\$1,218,950	\$300,000	\$ 918,950
School District*	14,499,249	2,319,880	510,000	1,809,880
City of Milford	2,059,764	329,562	216,000	113,562

*School Year 1978-79.

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Source: Statistical Review of Government in Utah,
Utah Foundation, 1979

Utah; County Economic Facts, Utah Industrial
Development Informational System, 1979

Population (3.4.5.3.4)

Beaver County population was 4,300 in 1978, an increase of 13.2 percent over 1970. Milford's 1978 population was 1,350. Beaver had 2,000 inhabitants and Minersville, 600. The county contains 1,040 households.

Housing (3.4.5.3.5)

Beaver County experienced moderate growth in housing over the last two decades. From 1960 to 1970, housing supply was virtually stationary, increasing from 1,395 to only 1,409. After 1970, the average annual growth rate increased to 1.3 percent, reaching 1,525 units by 1976. Single-family units remained constant at about 92 percent, with multi-family units and mobile homes comprising the remaining 8 percent. Over the 1970 to 1979 period, an average of 20 conventional housing units were produced each year, although 51 units were produced in 1972.

Community Infrastructure (3.4.5.3.6)

Organization

The cities of Milford and Beaver each have a mayor council-type government. The other incorporated city is Minersville. Other governmental agencies are the Beaver County Planning Commission, the Beaver County School District, Beaver Planning and Development Council, County Service Area Number 2, the Milford Valley Memorial Hospital Revenue District, and the South Milford Fire District. Beaver County is a member of the Five County Association of Governments, but does not participate in the Southwest District Health Program.

Education

In 1980, Beaver County School District, with an enrollment of 1,026 students, operated three elementary schools and two junior/senior high schools. Enrollment growth rates have been low, with little or no growth occurring in recent years. Presently, there are 620 pupils in the elementary grades, and 406 pupils in grades 7-12. Fifty-three teachers are employed in the school district. According to the school superintendent, the present school facilities are utilized below capacity and could accommodate another 650 pupils.

Health Care

The hospital in Beaver has ten acute care beds and plans to add ten more beds. Milford Valley Memorial Hospital has 12-acute care beds and 20 long-term-care beds. Health care personnel are one physician, one part-time dentist, six registered nurses, and two licensed practical nurses.

Police Protection

Milford has two full time police officers, Beaver City three officers, and Minersville one part-time officer. Additional law enforcement is provided by the sheriff's department and the Utah State Highway Patrol.

Fire Protection

Beaver County has a volunteer county fire department with two pumper trucks and an ambulance unit. The fire insurance classification for Milford is 7 on a scale where 1 is best, 10 worst.

Water Supply and Distribution

Water for domestic use is from three deep wells. Two other wells are used for irrigation. The city of Milford has water permits allowing a culinary use of 1,978 gpm and a total water right of 2,240 gpm. Per capita use in Milford is very high, due to lack of metered service and a high rate of leakage. Average daily water use is presently estimated to be 400 gpcd and may be greater than 800 gpcd during peak times.

Water rights total 1,978 gpm, 85 mg per month. Average monthly usage is 36 mg. Pumping capacity limits growth to a population of 1,350.

Wastewater Collection and Treatment

Most of Milford has sewers constructed over 100 years ago and the system is in poor condition. Connections are 460; average daily flow 0.17 mgs. The system has a design population of 2,000 and a design average day flow rate of 0.24 mgd.

Solid Waste

Currently there is no legal sanitary landfill site in the Milford area. Illegally operated open dump sites serve the area. The city will likely have to conform to Utah State Health laws requiring a legal sanitary landfill in response to population growth in the area. The state, however, has not been active in enforcing this requirement in rural communities.

Parks and Recreation

Parks and recreation facilities are a community park with swimming pool, an elementary school playground, and athletic facilities at the high school. There are several recreational areas located within the assumed 50 mi "sphere of influence".

Parklands

There are a number of parklands to the east of the Milford/Beaver region. The majority of these parklands are administered by the National Park Service, Utah Division of Parks and Recreation and the National Forest Service.

Cedar Breaks National Monument is approximately 50 mi south of Beaver and slightly farther from Milford. Although farther away, Zion and Bryce Canyon National Parks are expected to draw many visitors from Milford. These parks provide camping picnicking, snowmobiling, hiking, and sightseeing recreation opportunities.

Portions of the Fishlake and Dixie National Forests are within a short driving distance of the area. At least eleven developed campgrounds, one lake with boating and fishing facilities, two snowmobile areas and two skiing areas; Brianhead and Mount Holly (Table 3.4.5.3-6) are in the vicinity.

Table 3.4.5.3-6. Recreation sites on the Fish Lake and Dixie National Forest in the vicinity of Milford/Beaver.¹

SITE NAME	ACTIVITY	UNITS	MILES FROM MILFORD BEAVER
Fish Lake National Forest:			
Mahogany Cove	Camping	7 camps	40/10
	Fishing		
	Hunting		
Little Cottonwood	Camping	8 camps	35/5
	Fishing		
Little Reservoir	Camping	6 camps	40/11
	Fishing		
	Hunting		
Kent's Lake	Camping	17 camps	45/15
	Hunting		
	Boating		
	Fishing		
Anderson Meadow	Camping	10 camps	46/16
	Fishing		
	Hunting		
City Creek	Camping	8 camps	60/30
	Fishing		
	Hunting		
Castle Rock	Camping	9 camps	55/35
	Fishing		
Shell Oil Site	Camping	3 camps	65/50
	Fishing		
Dixie National Forest:			
Vermillion	Camping	10 camps	55/40
	Fishing		
	Hunting		
Panguitch Lake	Camping	69 camps	65/50
	Fishing		
	Hunting		
	Boating		
Red Canyon	Camping	30 camps	90/50
	Hunting		

3809

¹within a 50 mi radius.

Source: Utah Travel Council (19__).

There are three state parks in the vicinity of Milford/Beaver, Piute Lake, Minersville Lake and Otter Creek Lake State Recreation Area. Each of these areas provides boating, swimming, fishing and water skiing opportunities.

Snow-Related Recreational Facilities

There are three snow skiing resorts within a days driving distance of Beaver and Milford. Mt. Holly is just 15 mi east of Beaver and 45 mi from Milford. It has 25 skiable acres and a lift capacity of 1,800/hr. Brianhead and Cedar Canyon ski areas are greater than 50 mi to the south but they combine to 65 skiable acres and a lift capacity of 2,800/hr (UORA, 1976). Sage Valley near Cedar Breaks National Monument and Beaver Canyon near Junction are two favorite areas for snow play and contain many snowmobile trails.

Water Related Recreational Facilities

Of the developed water resources identified above, the three state parks, Minersville, Piute and Otter Creek, are closer to Beaver/Milford than Panquith Lake to the south. They essentially offer the same type of facilities, fishing, boating, waterskiing, and swimming. Minersville has 960 acres of surface water for recreation while Piute and Otter Creek have a total of 4,750 surface acres. Thus, approximately 6,000 surface acres of water recreation is immediately available to the Milford/Beaver area. Less than 200 surface acres are at Lake Panquith, approximately 50 miles to the south. Although no developed river rafting, kayaking or canoeing areas exist, there are a number of mountain creeks and the Seiver and Beaver Rivers may be utilized during portions of the year.

ORV and Other Forms of Dispersed Recreation

There are no dune areas in this region. However, one of the largest and most developed dunebuggy parks exists to the north at the Little Sahara Dunes Complex; 61 sq. mi. Although 100 mi from Milford, dunebuggy enthusiasts are more likely to travel this distance for a weekend because of the tremendous draw this area has.

Hill climbing and motocross areas are not well established in this area. However, pockets of ORV concentration have been identified in Wah Wah Valley, west of Milford and in the Black Hills area. Those areas immediately surrounding urban centers are often ORV concentration sites. Most of the public lands between Beaver, Minersville, and Milford may be expected to be used for ORV activity.

Hiking trails are more abundant in Piute and Garfield Counties, two counties in which Forest Service landholdings are significant. Reasons for this are preferred diversity of environments, more water and greater recreational management on Forest Seiver Lands when compared to BLM lands in this region.

Quality Of Life (3.4.5.3.7)

Between 1970-1977, Beaver County experienced an average annual growth rate of 1.6, below the Utah mean of 2.5. Beaver County's population density at 1.7 is also much less than the Utah mean of 15.5. As with most other rural counties in Utah, Beaver County has been experiencing a declining population, out-migration, and an increasing proportion of older persons. Between 1960-1970, Beaver County's

population fell by 12.3 percent. This population decline is largely attributable to young people leaving the area in search of employment opportunities elsewhere.

Older remaining citizens have said that they appreciate their community and environment. A 1974 study surveyed residents of Beaver County and found a high level of general satisfaction among the population of the communities. The advantages of their community mentioned by people included: access to out-of-doors, good place to raise family, friendliness of people, and absence of a polluted environment. Disadvantages included the lack of jobs for young people, lack of good shopping centers, lack of cultural refinement, and lack of opportunities for earning a livable income.

Health services are adequate. The level of social disorganization is low, as indicated by low divorce, suicide, and crime rates. Beaver County has less than one-half the number of police officers as does Utah generally.

Beaver County has adequate educational facilities. It is behind the Utah mean in terms of median school years completed (12.3 years compared to the state average of 12.8). The pupil/teacher ratios show less crowded classrooms than for the state.

People in Beaver County were asked how they would like to see public funds appropriated. Over 50 percent of the respondents wanted public tax money to be spent on the following:

1. Better health and medical services
2. Improved educational facilities
3. Developing local industry
4. Better housing
5. Recreational opportunities and cultural refinement

The citizens of Beaver County would like to see more local industry, which would benefit their community, and allow more young people to remain in the area.

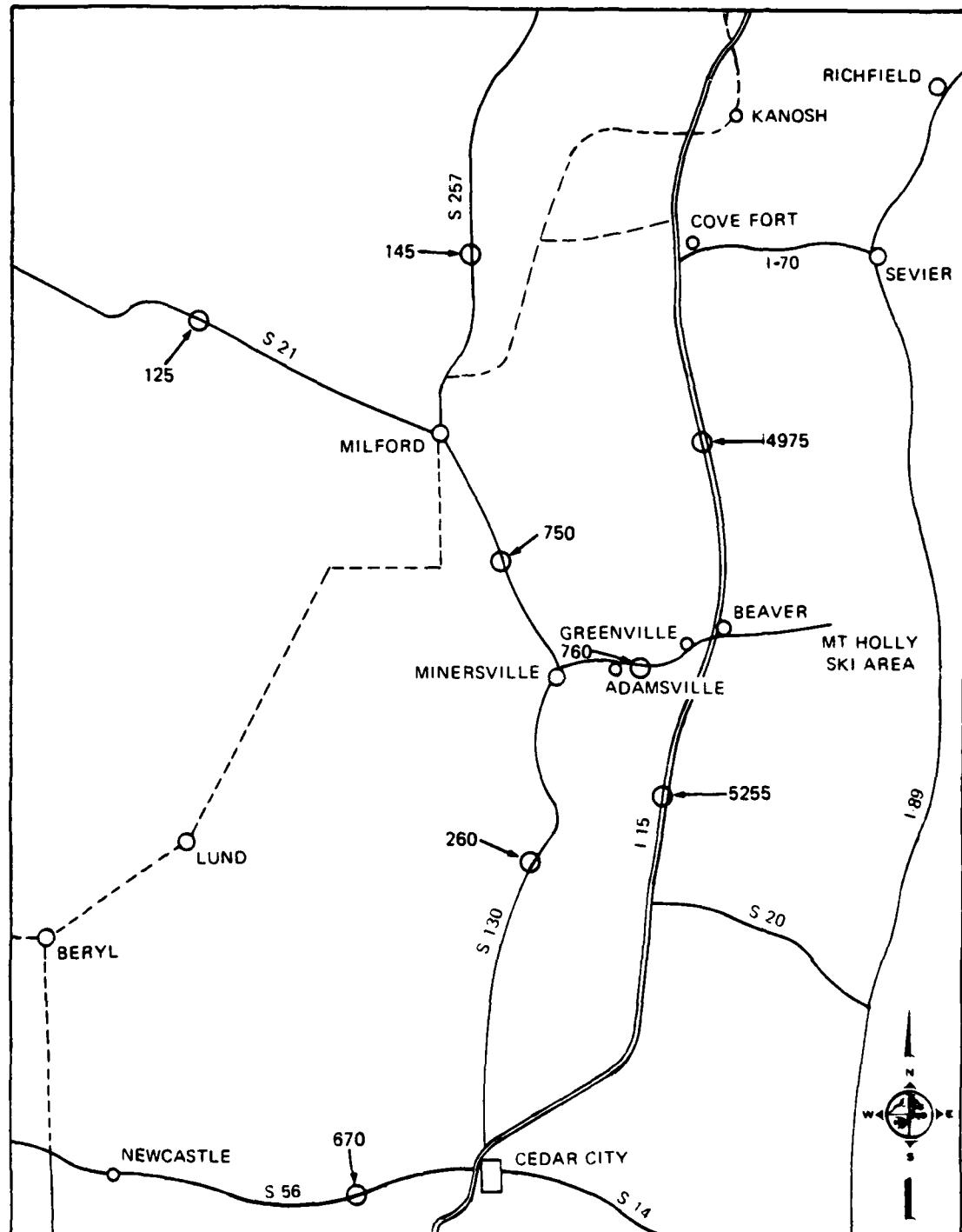
Traffic And Transportation (3.4.5.3.8)

The community of Milford is served by state routes 257 and 21 plus other minor county roads. The existing road system in the area is shown on Figure 3.4.5.3-3 along with the 1978 traffic volumes. As shown, the volume of traffic on each of the roads is very low.

The community of Milford lies adjacent to a Union Pacific Railroad line which connects Salt Lake City, Utah and Las Vegas, Nevada. Limited commercial airline service is available at Cedar City.

Energy (3.4.5.3.9)

Milford has no natural gas service. A gas pipeline may be built, passing near Milford. Presently, home energy requirements are supplied by bottled gas, fuel oil,



LEGEND 000 1978 TRAFFIC VOLUMES, MILFORD, UTAH

SCHEMATIC NOT TO SCALE 2332-A
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Figure 3.4.5.3-3. Traffic volumes in the vicinity of Milford.

and electricity. The fuels are trucked in from Las Vegas, Nevada, and Salt Lake City, Utah. Electrical energy is supplied via two 46 kV subtransmission lines. Proposed Intermountain Power Project lines may pass through the Milford area.

Land Ownership (3.4.5.3.10)

Roughly three-fourths of Beaver County is comprised of federal land holdings. The state controls about 9 percent, and private holdings, 16 percent, of Beaver County land. The proposed OB and related facilities, such as the OBTS in the vicinity of Milford, are located in an area principally under private land ownership. Within a 5 mi radius of the centroid of the proposed site, 23,000 acres are in private land, 5,440 acres in state lands, and the balance, 21,800 acres, in federal land.

Five mi to the north and northeast of the proposed OB site, the land is primarily under the control of the Bureau of Land Management and would therefore offer an alternative site that is federally controlled.

Land Use (3.4.5.3.11)

Oil/gas leases exist near the potential OB site at Milford. Principal land uses in the Milford area include cattle grazing on BLM-administered land. The adjacent communities of Milford and Minersville do not have land use plans. The proposed base site lies entirely on BLM-administered lands.

Agriculture

There are no croplands located within the vicinity of the proposed OB near Milford, Utah. Irrigated and non-irrigated cropland and pastureland within the county are described in Section 3.3.3.8. The OB is located in the BLM Pinyon Planning Unit where the BLM permits 19.4 acres per AUM for a total grazing authorization of 87,375 AUMs.

Recreation

There are no fishing or recreational areas proximate to the OB site. Since the region is entirely in public domain, it is open to dispersed recreational use, including collecting activities, off-road recreational vehicle use, and small game hunting.

Mining

There are no mining sites located on land where an operating base could be located.

Land Use Plans

The Five County Association of Governments is the regional planning agency in the southwestern district. The Beaver County Planning and Development Council provides the overall guidance for planning activities in the region. While the communities of Milford and Minersville do not have land use plans, Beaver County has a current land use plan adopted in 1972.

Beaver County has adopted a long range master plan of development. The plan includes all of the unincorporated portions of the county along with the three incorporated towns of Beaver, Milford, and Minersville. The plan has been adopted in all areas except the town of Beaver.

Of the 1,642,927 acres of land in the county, 77 percent is under federal control and 10 percent under state control, leaving just 13 percent of the land in Beaver County privately-owned. There are 39,441 acres of irrigated cropland and 668 acres of non-irrigated cropland along with 4,001 acres of pasture land in the county. Most of this agricultural development is on private land. However, much of the federal and state land is used for livestock grazing purposes.

Beaver City Land Use

The land area of Beaver is approximately 827 acres. Of this amount, about 68 percent has been used for development, and about 32 percent is presently vacant and unused. Commercial development in Beaver accounts for about 13 acres of land and about 2 percent of the land area. There would appear to be adequate room in commercial areas for continued expansion of this area. Streets are one of the big land users, accounting for almost as much total acreage as is presently devoted to single-family residential use. It is typical for most pioneer communities laid out on a gridiron pattern to have over 20 percent of the land area devoted to streets.

Milford Land Use

Of the 494 acres of land within Milford, approximately 88 acres or 18 percent are used for residential purposes. The dominant portion of Milford still remains undeveloped, with 303 acres, or 62 percent of the land vacant and undeveloped. If the undeveloped land within the presently constituted boundaries of Milford were developed at an average density of five dwelling units per acre, this would allow for 1,529 new residences, or an additional population of between 4,600 and 4,900 persons.

Minersville Land Use

The residential density in Minersville at the present time is about two acres per dwelling unit. Of the approximately 368 acres of land in the community, about 40 acres are actually used for residential purposes. A considerable amount of land is either used for agricultural purposes or is undeveloped. If this land was developed for residential purposes at a density of one acre per dwelling unit, some 219 new dwellings could be constructed without expansion of the existing community boundaries. This would accommodate approximately 650 additional persons.

The amount of land in Minersville devoted to public and commercial uses is low and can be expected to increase as the community grows and the need for more commercial or public area develops. Nearly 35 percent of the land area is presently vacant, with roadways accounting for another 30 percent.

Zoning

As a direct outgrowth of the 1972 Beaver County master plan, implementing ordinances including a zoning ordinance, subdivision ordinance, and a building code were recommended, but have not been put into effect.

Milford

Native Americans (3.4.5.3.12)

The Milford siting area lies within the aboriginal territory of the Kwuimpits band of Southern Paiutes. This northernmost band occupied the once game-rich Beaver River Valley. The area under consideration is also within the possible subsistence range of the isolated Indian Peak band of Southern Paiutes. Descendants of these bands are found today in the Cedar City, Kanosh, and Richfield Indian colonies. Field research to gather site-specific data is currently in progress.

There are no reservation lands or Native American communities at the potential Milford OB site or in the immediate environs. Milford lies between the Kanosh and Richfield colonies to the north and the Cedar City colony to the south.

Archaeological and Historical Resources (3.4.5.3.13)

There are no known recorded sites in the proposed operating base area. However, the presence of numerous sites north of Milford suggest that the potential for limited activity sites such as lithic scatters and short term campsites exists.

Paleontological Resources

The Milford OB siting area is located on alluvial valley fill in an area that at one time was inundated by Lake Bonneville. The disturbance of Bonneville sediments through excavation has the potential for destroying fossils contained in the sediment. Sites proposed for excavation or earth moving activities can be examined to determine the possible presence of fossil material.

3-511 /3-512

Clovis



CLOVIS (3.4.6)

Introduction (3.4.6.1)

The site is ten mi west of Clovis adjacent to Cannon Air Force Base (Figure 3.4.6.1-1). There are two potential layouts. One is a first OB (Alternative 7), full deployment in Texas/New Mexico. This includes an OB, the existing Cannon Air Force Base airfield, DAA, DTN, OBTS, and a railroad spur. The other is a second OB complex (Alternative 8), split-basing in Nevada/Utah and Texas/New Mexico. This complex is the same as the first except there will be no OBTS. The railroad spur will connect to the A.T. & S.F. Railroad.

The area of analysis (AOA) is Curry County. The AOA is in the south central part of the region of influence (ROI). Clovis and Cannon AFB are the major settlements. This section describes environmental characteristics of Clovis and the AOA.

Natural Environment (3.4.6.2)

Groundwater (3.4.6.2.1)

The principal groundwater source in the Clovis area is the Ogallala Formation, sand and gravel beds interspersed with sand silt and caliche. Zones of saturation range from a few feet to more than 200 mi. Depths to the water table around Clovis are from 200 to 500 ft. Precipitation is the dominant source of recharge. Heavy pumping has caused large water level declines and at current depletion rates the projected aquifer life is 37 years. Water use charges will likely increase as water supplies decline.

New Mexico law requires a permit for water appropriation in declared underground basins. If purchase of water results in a change in use, New Mexico law requires approval by the state engineer.

Surface Water (3.4.6.2.2)

Precipitation during May and June is the sole source of surface water contained in playa lakes.

Air Quality (3.4.6.2.3)

A summary of some climatological conditions influencing air quality is in Table 3.4.1.2-1. Clovis is located in AQCR No. 155. Particulate and gaseous emissions for this AQCR are given in Table 3.4.1.2-2. Total particulate emissions for Curry County were 1,510 tons per year. Visible dust is a problem, particularly in March and April, when it appears 6 percent of the time.

Biological Resources (3.4.6.2.4)

Soils belong predominantly to the Amarillo and Clovis series. Slopes average less than 2 percent and may range up to 5 percent. The soils are moderately deep and well drained and have fine sandy loam and loamy fine sand surface textures underlain by a lime-enriched zone. The soils of this region are very susceptible to wind erosion when not protected by a good cover of vegetation.

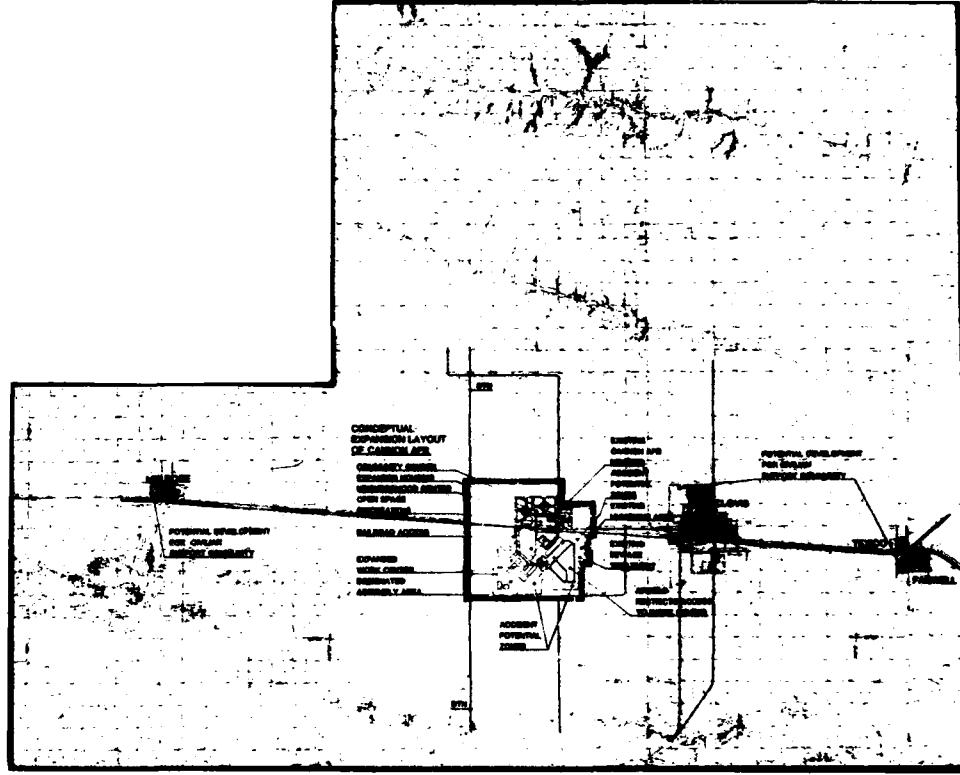


Figure 3.4.6.1-1. Area of Analysis (AOA) for the Clovis vicinity.

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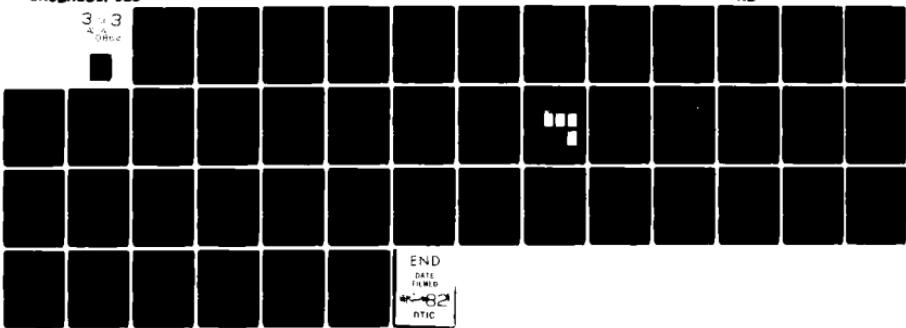
DEPARTMENT OF THE AIR FORCE WASHINGTON DC
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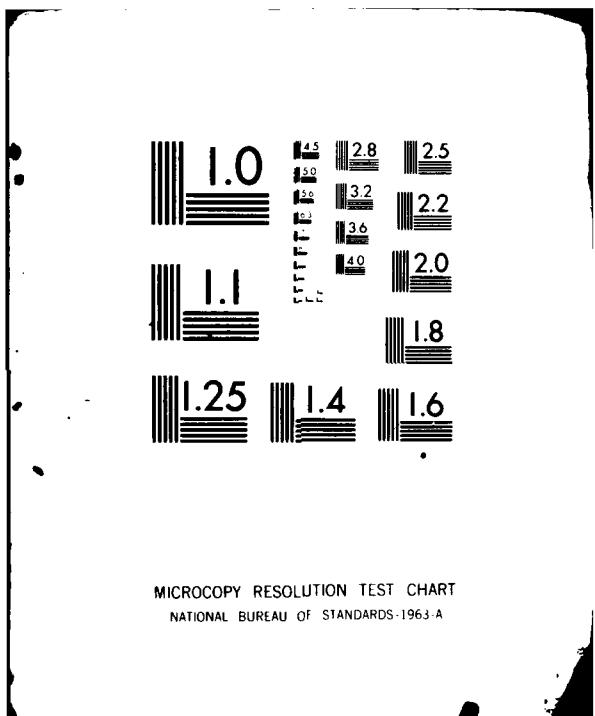
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The potential OB complex could utilize Cannon Air Force Base and adjacent land which is presently used for agriculture. There is very little natural vegetation in the area. The wildlife species are common to agricultural areas throughout the region, and include bobwhite quail and pheasant. There are no aquatic habitats. There are no protected animal species reported in the area, although the protected Central Plains milk snake and Texas horned lizard and migrating birds of prey may be present. No protected plants have been reported. The nearest significant natural area is Grulla National Wildlife Refuge 20 mi to the southeast and closed to the public. Extensive sandhills are found between the Refuge and the site. There are few biologically sensitive areas. There are some playa lakes scattered in the area, used by upland game for cover, by waterfowl for resting and feeding, and by wildlife in general for water. The biota of the Clovis area is tolerant of human activity.

Human Environment (3.4.6.3)

Employment (3.4.6.3.1)

Table 3.4.6.3-1 and 3.4.6.3-2 highlight detailed employment characteristics of Curry County. The former table indicates the relative dependence of the county's economy on only one sector -- government, comprising 38 percent of total employment in 1978. Much of the county's government employment is provided by Cannon AFB near Clovis. Other sectors, notably manufacturing and services, traditionally dominate a well-balanced economic base; in Curry County manufacturing employment is one-quarter that for the national average and services employment is two-thirds that of the United States 1978 share.

Table 3.4.6.3-2 presents 10-year employment growth figures and indicate that Curry County employment has increased at an average annual rate of 2.2 percent per year. This figure is above the national average but far below the average annual growth in employment for New Mexico as a whole. All sectors have grown appreciably in Curry County except agriculture which experienced an employment loss of 273, and mining, where complete employment data are not available.

The baseline labor force for Curry County is traced graphically from 1970-1994 in Figure 3.4.6.3-1. The amount of workers in the labor force has increased over the past decade from 11,339 in 1970 to 14,745 in 1979. Labor force projections from 1980 to 1994 show a sharp increase from 1981-1982 and then a leveling off period through 1994 at around 15,500 workers.

The baseline unemployment rate in Curry County is shown graphically from 1970-1994 in Figure 3.4.6.3-2. The unemployment rate has varied over the past decade between 4.5 and 8 percent. It is projected to remain at around 6 percent from 1982 through 1994.

Income and Earnings (3.4.6.3.2)

Total earnings have exhibited little growth over the 1967-1977 period. Table 3.4.6.3-3 highlights Curry County earnings by major industrial sectors relative to other counties in the site. It indicates that the county's 1977 total earnings of \$208 million was about 3 percent of the state's total. Curry County's rate of earnings growth over the 1967-1977 period was two-thirds that for the United States and only one-third that for New Mexico. Agricultural earnings dropped by over \$10 million.

Table 3.4.6.3-1. Total employment and percent share by major economic sectors for counties in New Mexico, 1977.

COUNTY	TOTAL EMPLOYMENT	PERCENT OF TOTAL STATE EMPLOYMENT	AGRICULTURE SHARE (PERCENT)	MINING SHARE (PERCENT)	CONSTRUCTION SHARE (PERCENT)	MANUFACTURE SHARE (PERCENT)	SERVICES SHARE (PERCENT)	GOVERNMENT SHARE (PERCENT)
Chaves	19,160	3.9	9.3	1.7 ¹	4.2 ¹	11.2	14.5	20.0
Curry	18,558	3.7	6.3	0.1	3.4	5.0	11.2	37.7
De Baca	991	0.2	28.	0.0	3.9	2.0	(D)	27.3
Harding	664	0.1	47.3	(D)	(D)	8.7	4.5	22.0
Quay	4,900	1.0	18.8	0.2	3.6	3.4	14.9	23.2
Roosevelt	6,566	1.3	22.5	0.2	2.3	3.4	6.4	32.8
Union	2,212	0.4	31.0	(D)	1.9	0.9	11.1	22.9
New Mexico ROI	53,051	10.7	12.5	0.7 ¹	3.5 ¹	6.7	11.8	28.3
Total State	496,514	100.0	4.3	4.7	6.2	6.5	16.8	27.1
United States	97,848,874		4.2	0.8	4.0	20.1	17.4	18.2

¹Estimated

? (D) = not shown to avoid disclosure of confidential information.

Source: BEA, April 1979.

3797-1

Table 3.4.6.3-2. New Mexico employment growth by sector, study area counties, 1967 to 1977 (Pg. 1 of 2).

COUNTY	TOTAL		AGRICULTURE		MINING		CONSTRUCTION	
	1967	1977	Δ ¹	1967	1977	Δ	1967	1977
Chaves	15,885	19,160	1.9	2,032	1,774	-1.3	438	334
Curry	14,335	18,558	2.2	1,442	1,169	-2.1	(D)	16
De Baca	951	991	0.4	361	286	-2.3	(D)	0
Harding	702	664	-0.6	372	314	-1.7	0	(D)
Quay	4,793	4,900	0.2	1,165	922	-2.3	(D)	(L) ³
Roosevelt	5,747	6,566	1.3	1,787	1,477	-1.9	51	12
Union	2,093	2,212	0.6	752	685	-0.9	(D)	(D)
Texas ROI	45,106	53,051	1.6	7,911	6,627	-1.8	489	352
Total State	358,436	496,514	3.3	24,907	21,127	-1.6	15,890	23,306
United States	82,506,400	97,848,874	1.7	4,625,000	4,152,874	-1.1	615,000	824,000

379R-1

Table 3.4.6.3.-2. New Mexico employment growth by sector, study area
counties, 1967 to 1977 (pg. 2 of 2).

COUNTY	MANUFACTURING			SERVICES			GOVERNMENT	
	1967	1977	Δ	1967	1977	Δ	1967	1977
Chaves	1,030	2,154	7.7	2,503	2,781	1.1	3,171	3,834
Curry	572	925	4.9	1,444	2,078	3.7	5,719	6,990
De Baca	(D)	20	(D)	92	(D)	(D)	190	271
Harding	(D)	58	(D)	(D)	30	(D)	132	146
Quay	90	166	6.3	637	729	1.4	1,024	1,136
Roosevelt	224	221	-0.1	446	422	-0.5	1,261	2,156
Union	(D)	20	(D)	260	245	-0.6	391	506
Texas ROI	1,916	3,564	6.4	5,382	6,285	1.6*	11,888	15,039
Total State	18,032	32,188	7.0	62,298	83,337	3.0	101,278	134,754
United States	14,504,000	19,696,000	0.1	12,675,000	17,030,000	3.0	13,924,400	17,795,000

3798-1

¹ Δ = Average annual growth rate.

² (D) = Not shown to avoid disclosure of confidential information.

³ L = Less than 10 wage and salary jobs.

* = Rate in doubt because of large number of data points withheld by disclosure rules.
— = Undefined.
• = Estimate.

Source: BEA, April 1979.

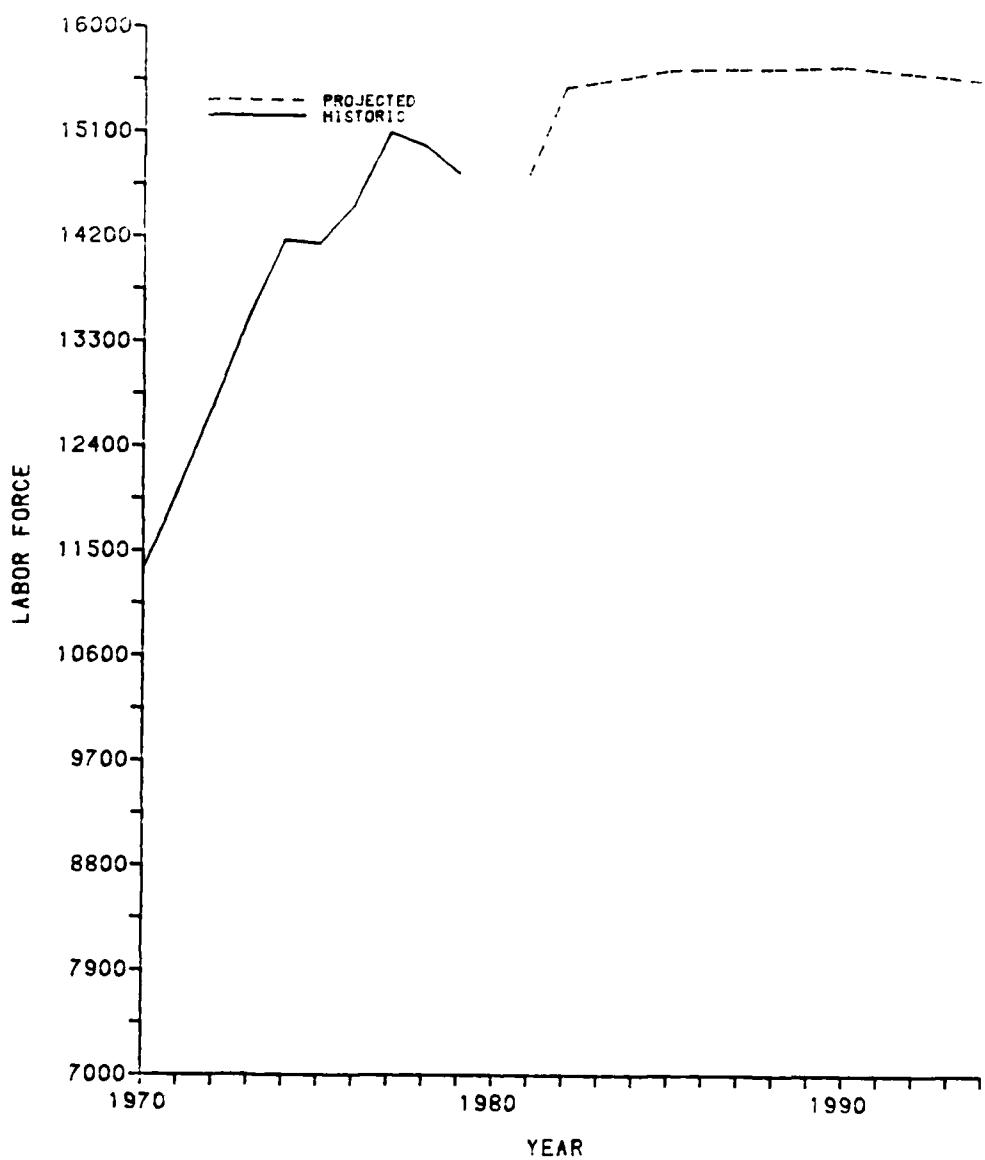


Figure 3.4.6.3-1. Historic and projected baseline labor force in Curry County.

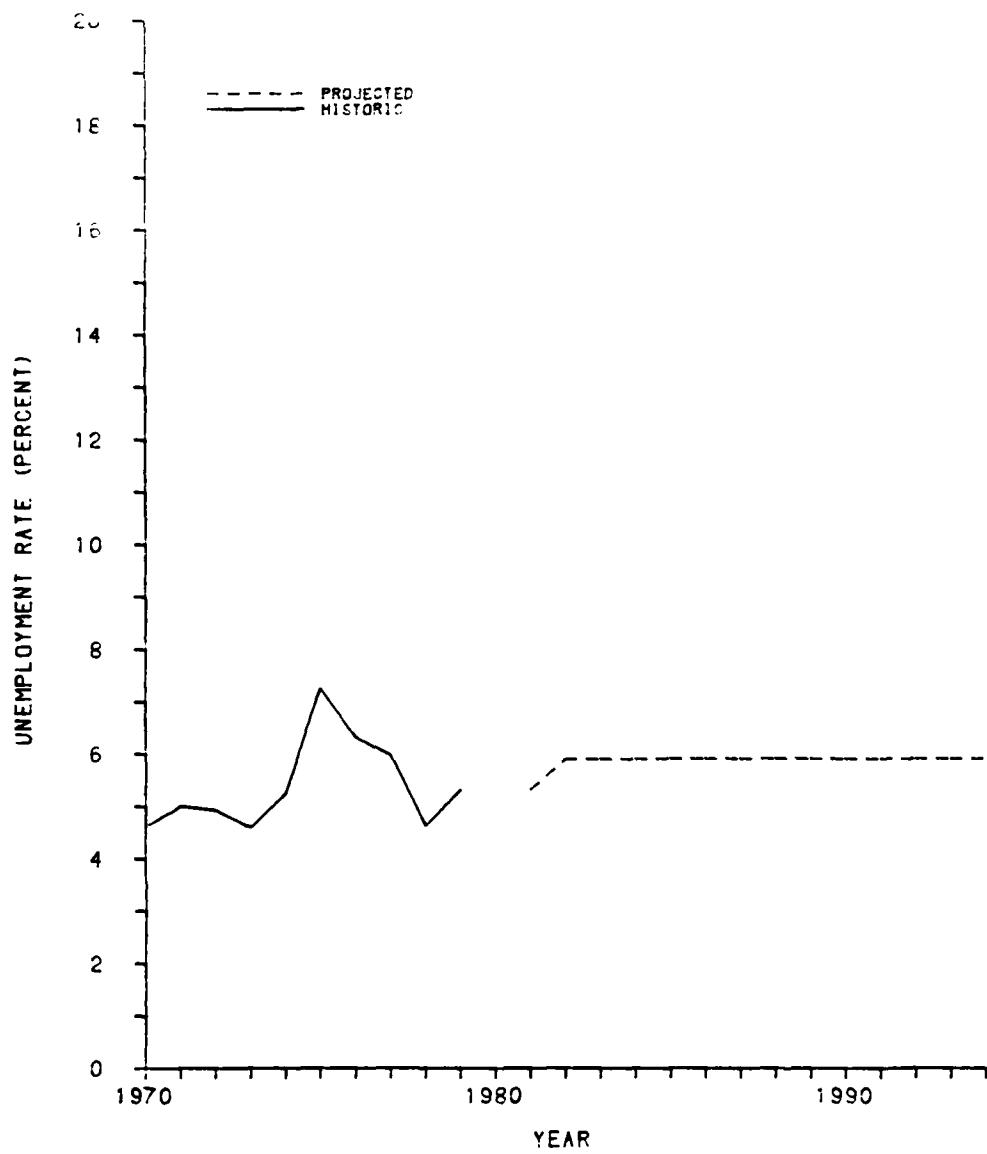


Figure 3.4.6.3-2. Historic and projected baseline rate of unemployment in Curry County.

Table 3.4.6.3-3. Earnings by economic sector, New Mexico counties, 1967-1978 (in thousands of 1978 dollars). (Page 1 of 2)

COUNTY	TOTAL EARNINGS			AGRICULTURE			MINING		
	1968	1978	A ¹	1968	1978	A ¹	1968	1978	A ¹
Chaves	161,706	208,420	2.6	34,588	25,340	-3.1	6,803	9,803	3.3
Curry	176,884	208,420	1.6	30,538	20,328	-4.0	288	346	2.1 ^b
De Baca	6,626	10,100	4.3	2,244	4,243	6.6	(D)	(D)	(D)
Harding	4,974	4,655	-0.7	2,370	1,050	-7.8	(L) ³	(D)	(D)
Quay	38,136	46,458	2.0	10,309	10,165	-0.1	175	348	12.1 ^b
Roosevelt	62,820	67,935	0.8	28,491	22,083	-2.5	452	978	8.0
Union	25,279	30,275	1.8	14,421	15,427	0.7	(D)	(D)	(D)
New Mexico ROI	476,425	575,856	1.9	122,961	98,636	-2.2	7,648 ^f	11,129	3.8 ^b
Total State	4,027,776	6,166,041	4.4	266,644	266,644	-1.0	259,376	541,278	7.7
United States	1,039,655,600	1,318,750,000	2.4	33,005,625	33,188,000	0.1	10,528,125	20,552,000	6.9

3817-2

Table 3.4.6.3-3. Earnings by economic sector, New Mexico counties, 1967-1978 (in thousands of 1978 dollars). (Page 2 of 2).

COUNTY	CONSTRUCTION			MANUFACTURING		
	1968	1978	L	1968	1978	L
Chaves	8,254	13,650	5.2	11,846	25,124	7.8
Curry	6,504	9,597	4.0	7,905	12,105	4.4
De Baca	366	675	6.3	105	153	5.5
Harding	260	101	-8.2 ^a	491	976	10.3 ^c
Quay	1,292	4,015	12.0	724	1,390	6.7
Roosevelt	1,742	1,888	0.8	1,916	2,530	2.8
Union	696	2,346	12.9	205	432	9.8 ^b
New Mexico ROI	19,094 ^e	32,272	5.4	23,016 ^e	42,710	6.4
Total State	264,064	517,492	7.0	237,330	430,710	6.1
United States	62,388,750	79,872,000	2.5	303,099,380	345,771,000	1.3

3817-2

COUNTY	SERVICES			GOVERNMENT		
	1968	1978	L	1968	1978	L
Chaves	21,660	29,443	3.1	26,754	36,703	3.8
Curry	14,044	22,317	4.7	71,128	78,939	1.0
De Baca	699	751	0.7	1,558	1,897	2.0
Harding	117	132	1.3 ^a	1,144	1,475	2.6
Quay	4,142	4,599	1.1	9,032	10,316	1.3
Roosevelt	3,769	4,492	1.9	13,886	21,474	4.5
Union	1,862	1,905	0.2	3,919	4,446	1.3
New Mexico ROI	46,290 ^e	63,639	3.2	127,421	157,250	2.1
Total State	687,840	1,012,124	3.9	1,242,111	1,652,096	2.9
United States	153,226,880	221,951,000	3.8	174,725,630	216,896,000	2.2

3817-2

^aL = Average annual growth rate.

^b(D) = Not shown to avoid disclosure of confidential information.

^c(L) = Less than 10 wage and salary jobs.

^dRate in doubt because of large number of data points withheld by disclosure rules.

^e— = Undefined.

^fEstimate.

Source: BEA, July 1980.

Construction, manufacturing, services and government sectors all posted large earnings gains over the 10-year period.

Table 3.4.6.3-4 highlights per capita income and earnings shares by major industry in Curry County. The county's 1977 per capita income of \$6,767 was slightly higher than the state figure but only 86 percent of U.S. per capita income. By industrial sources, government contributed 38 percent of Curry County's total 1978 earnings, as employment in this sector would have indicated. This was well above the state average of 27 percent and national average of 16 percent. Earnings shares in the other major industries were well below both state and national averages except in agriculture, where earnings levels more than doubled the national average and were two-thirds that for New Mexico.

Public Finance (3.4.6.3.3)

Potentially affected local governments in the Clovis and vicinity operating base location are the city of Clovis and Curry County. Table 3.4.6.3-5 presents general fund receipts and expenditures for Clovis.

Total intergovernmental revenues account for 72.7 percent of total general fund revenues. Clovis' share of state gross receipts tax (sales tax) comprised over 87 percent of revenues. Property tax receipts and other locally raised revenues total only 27.3 percent of the general fund, indicating an extreme dependency on state and federal sources of revenues.

Over 97 percent of total general fund disbursements are for current operations. In Clovis, 3.7 percent is expended on capital outlays, well below the state average of 12.5 percent.

Table 3.4.6.3-6 presents general revenue and expenditures for Curry County. Transportation (highways and streets) disbursements comprise over 36 percent of total general expenditures. At the national level, transportation expenditures for all county governments average 9.4 percent. Table 3.4.6.3-7 presents assessed value, indebtedness, and reserve bonding capacity for Curry County.

Population (3.4.6.3.4)

Clovis' population was 34,524 in 1979. It accounts for about 72 percent of Curry County's residents. Between 1950 and 1975, the city's population increased by 45.4 percent and is estimated to be growing at a rate of 2.5 percent a year. The population of Curry County is estimated to have increased by about 6,400 persons since 1970 to 45,950 in 1978. A large share of the population growth has resulted from in-migration to the city from outside New Mexico.

Housing (3.4.6.3.5)

Curry County has experienced moderate growth in housing supply in the last two decades. From 1960 to 1970, county housing units increased from 10,098 to 12,390. In the next decade, the average annual growth rate increased 3.1 percent. By 1979, there were 14,900 housing units. The proportion of the county's housing

Table 3.4.6.3-4. Per capita income and earnings shares by economic sector, New Mexico counties, 1978.

COUNTY	1978 PER CAPITA INCOME	TOTAL 1978 EARNINGS (000's of \$)	PERCENT OF TOTAL STATE EARNINGS	AGRICULTURE SHARE (PERCENT)	MINING SHARE (PERCENT)	CONSTRUCTION SHARE (PERCENT)	MANUFACTURE SHARE (PERCENT)	SERVICES SHARE (PERCENT)	GOVERNMENT SHARE (PERCENT)
Chaves	6,238	208,420	3.4	12.2	4.5	6.5	12.1	14.1	18.6
Curry	6,767	208,013	3.4	9.8	0.2	4.6	5.8	10.7	37.9
De Baca	5,708	10,100	0.2	42.0	(D)	6.7	1.5	7.4	18.8
Harding	5,529	4,655	0.1	22.6	(D)	2.2	21.0	28.4	31.7
Quay	6,224	46,458	0.8	21.9	0.7	8.6	3.0	9.9	22.2
Roosevelt	6,107	67,935	1.1	32.5	1.4	2.8	3.7	6.6	31.6
Union	8,010	30,275	0.5	51.0	(D)	7.7	1.4	6.3	14.7
Texas ROI	6,443	575,856	9.3	17.1	1.9	5.6	7.4	11.1	27.3
Total State	6,592	6,166,041	100.0	6.8	8.8	8.4	7.0	16.4	26.8
United States	7,840	1,318,750,000		4.4	1.6	6.1	26.2	16.8	16

¹Estimated.

²(D) = not shown to avoid disclosure of confidential information.

Source: BEA, July 1980.

3801-1

Table 3.4.6.3-5. General fund receipts and expenditures,
City of Clovis, New Mexico, fiscal year,
1977-1978.

ITEMS	DOLLARS	PERCENT OF TOTAL
REVENUES		
TAXES:		
Property Tax	313,984	9.33
Occupational Tax	140,500	
LICENSES AND PERMITS	173,484	
FINES AND FORFEITURES	67,655	2.01
FRANCHISE FEES	76,595	2.28
INTERGOVERNMENTAL REVENUES	246,923	7.34
CURRENT SERVICE CHARGE	1,446,509	72.68
OTHER	127,017	3.77
TOTAL REVENUES	3,365,987	100.00
EXPENDITURES		
PERSONAL SERVICES	2,113,800	69.57
OPERATING EXPENSES	842,819	27.74
CAPITAL OUTLAY	81,533	2.69
TOTAL EXPENDITURES	3,038,052	100.00

2646

Source: City of Clovis, Statement of Revenues and Expenditures,
1977-1978.

Table 3.4.6.3-6. Financial statistics for Curry
County, New Mexico, fiscal year,
1976-1977.

ITEMS	DOLLARS	PERCENT OF TOTAL
GENERAL REVENUE	1,487,000	100.00
INTERGOVERNMENTAL REVENUE	731,000	49.16
TAXES	656,000	44.12
Property Tax	648,000	
Other	8,000	
CHARGES AND MISC.	100,000	6.72
GENERAL EXPENDITURE	1,376,000	100.00
EDUCATIONAL	23,000	1.67
SOCIAL SERVICES	75,000	5.45
TRANSPORTATION	501,000	36.41
PUBLIC SAFETY	196,000	14.24
ENVIRONMENT AND HOUSING	54,000	3.92
GOVERNMENTAL ADMINISTRATION	353,000	25.65
OTHER	174,000	12.65
EXHIBIT: SALARY AND WAGES	482,000	35.03

2647

Source: 1977 Census of Governments, Finances of Counties,
U.S. Department of Commerce Bureau of the Census.

Table 3.4.6.3-7. Assessed value, indebtedness,
and reserve bonding capacity,
Curry County, 1979.

JURISDICTION	ASSESSED VALUE	GENERAL OBLIGATION INDEBTEDNESS	RESERVE BONDING CAPACITY
Curry County	\$106,327,000	\$ 190,000	\$4,063,080
Clovis Municipal School	\$ 90,413,793	\$3,354,000	\$ 271,551
City of Clovis	\$ 72,679,899	\$ 290,000	\$2,625,196

3136

Source: New Mexico Department of Finance and Administration, 1979-80.

stock in single-family units decreased from 82 percent in 1970 to 69 percent in 1979, while the share of multi-family units and mobile homes increased to 31 percent from 18 percent.

An average of 250 permanent housing units were added to the housing stock each year between 1970 and 1979, with a maximum yearly authorization of 322 units in 1972. In 1979, there were 2,300 mobile homes in Curry County, 15 percent of all housing stock. In 1970, the rate of owner-occupancy was 59 percent, and almost 78 percent of the county's housing was in Clovis.

Community Infrastructure (3.4.6.3.6)

Organization

Clovis, incorporated in 1909, operates under a city commission-city manager form of government. The county is part of a soil and water conservation district, El Paso Estado Resource Conservation and Development District, and is also one of seven counties belonging to the Eastern Plains Council of Governments, headquartered at Clovis. School districts are in Clovis, Grady, Texico, and Melrose.

Education

In 1975, the Clovis public school system had an enrollment of 9,432 students and employed 422 teachers. The system operates 12 elementary schools, three junior high schools, and one senior high school. There are two parochial schools in the city, with an enrollment of approximately 435. The Clovis school system has the capacity to accommodate an additional 750 students, although there is some crowding at the senior high school level. Plans to expand schools of all grade levels are in process.

Health Care

Clovis High Plains Hospital and several health clinics have a 106-acute-bed capacity. Cannon Air Force Base has a 100-bed hospital. Clovis Hospital and clinics have 22 doctors, 110 nurses 18 dentists, and 12 mental health workers. The hospital has a 65 percent user rate.

Police Protection

Clovis has 72 police officers. Six sheriff's officers and eight state police officers patrol the county.

Fire Protection

Clovis has five engine companies and 75 firemen. One of these companies is located at the airport and maintains a crash truck. Clovis firemen operate seven ambulances. Other equipment includes eight 1,500-gallon pumper trucks, one snorkel unit, and one rescue truck. The city has a fire insurance rating of 6. Under a mutual aid agreement with Cannon AFB fire department, equipment and personnel can be shared.

Water Supply

Clovis uses 36 wells with a 11,100 gpm capacity. The average and peak consumption rates are approximatley 4,170 gpm and 6,950 gpm. Water supplies are adequate.

Wastewater Collection and Treatment

The Clovis wastewater treatment system serves 36,000 people at a flow of 2.7 mgd. A new system will be built in two years with a capacity to serve 60,000 at a flow of 4.5 mgd.

Solid Waste

The Clovis solid waste disposal site of 80 acres will be exhausted by 1982. A new facility is planned.

Parks and Recreation

Clovis has 10 parks with playground facilities, and one 3,400-acre regional park nearby. Other public recreation facilities are 14 ballfields, an 18-hole golf course, seven tennis courts, four basketball courts, eight soccer fields, and two swimming pools.

Parklands

All of the developed parklands within the assumed 50 mi "sphere of influence" are owned and managed by the New Mexico Parks and Recreation division. Included are Oasis State Park, Sumner Lake State Park and Ute Lake State Park. The National Fish and Wildlife Service manages Grulla and Mulshoe Wildlife Refuges (Table 3.4.6.3-8). The major type of recreational opportunities supplied by these sites are camping and water oriented (fishing, boating and swimming).

Water Related Recreational Facilities

As noted above, water based recreation facilities are in abundance around the Clovis area. The two largest lake-sites, Sumner and Ute, total approximately 10,000 surface acres and both are approximately 70 miles from Clovis.

Snow Related Recreation Facilities

These are no snow recreational opportunities in the vicinity of Clovis. The nearest facilities are in the Carson, Lincoln and Santa Fe National Forests over 150 mi to the west.

ORV and Other Forms of Dispersed Recreation

These are no developed ORV parks in this region and most of their activity is expected to be concentrated around urban centers and/or associated with hunting,

Table 3.4.6.3-8. Developed recreation sites in the vicinity of Clovis.

SITE NAME	ACTIVITIES	ACRES	MILES FROM CLOVIS
Oasis State Park	Camping Fishing Picnicking	200	20
Sumner Lake State Park	Camping Fishing Boating Swimming	220 6000 ¹	70
Ute Lake State Park	Camping Fishing Boating Swimming	1307 4078 ¹	70
Grulla Wildlife Refuge	Sightseeing (Bird Watching)	3321	35
Muleshoe Wildlife Refuge	Camping	6000 745 ¹	50

3810

¹Surface Water Area

Source: New Mexico State Planning Office, 1976; Texas Parks & Wildlife Department, 1975.

fishing or sightseeing. In Quay, Roosevelt and Curry counties, there are only two miles of designated trails for ORV activity. There are no designated hiking trails, primitive camping sites, or stream fishing sites. The primary reason for this lack of dispersed recreation is that only a very small portion of these counties (0.62% of total area) is devoted to recreation.

Quality of Life (3.4.6.3.7)

Curry County is a typical eastern New Mexico county, with an agricultural economic base. The county has been growing at a moderate rate and is relatively densely populated with an average of 31 persons/mi². However, its economic growth has been slower than its population growth and its per capita income was less than \$3,700 in 1977, 37 percent below the state figure. On two of the other economic well-being indices, Curry county does better than the state, with a low unemployment rate (4.3 percent compared to 7.8 percent for New Mexico) and a lower proportion of the population on public assistance (17.6 percent, versus 20.9 percent for the state). On some of the community service indices, Curry County does not compare as favorably with state averages. For example, the county has a higher student to teacher ratio (22.3 to 1 versus 22.1 to 1), and fewer doctors, nurses, dentists, and police officers per capita.

The county does have a high level of cultural, religious, and ethnic heterogeneity, and its indicators of social organization show it to be fairly stable. For example, crime rates are 60 percent below New Mexico's average; alcohol and substance abuse is 40 percent below the state figure; and divorce rates are 15 percent lower.

Most rural land in the vicinity of Clovis is privately held and local farmers tend to be possessive of their property, and have developed their values and lifestyles around this fact.

Traffic and Transportation (3.4.6.3.8)

The Clovis area is served by two U.S. highways and numerous state and county roads. The proposed site involves the expansion of an existing facility, Cannon AFB, which is located approximately 10 miles west of Clovis along U.S. 60, and provides primary access to the base. State Route 467 extends south from near the base and provides access to Portales 13 miles from the base. Figure 3.4.6.3-3 shows the major roads in the area and 1978 traffic volumes.

Clovis is served by the Atcheson, Topkeas and Santa Fe Railroad, and commercial airline service is available at the municipal airport.

Energy (3.4.6.3.9)

Natural gas supplies are excellent; petroleum product and crude oil pipelines cross the Clovis area and fuel supplies are excellent. Electrical energy is supplied to Clovis via two 115 kV transmission lines. Cannon AFB is supplied by a 69 kV line from Clovis.

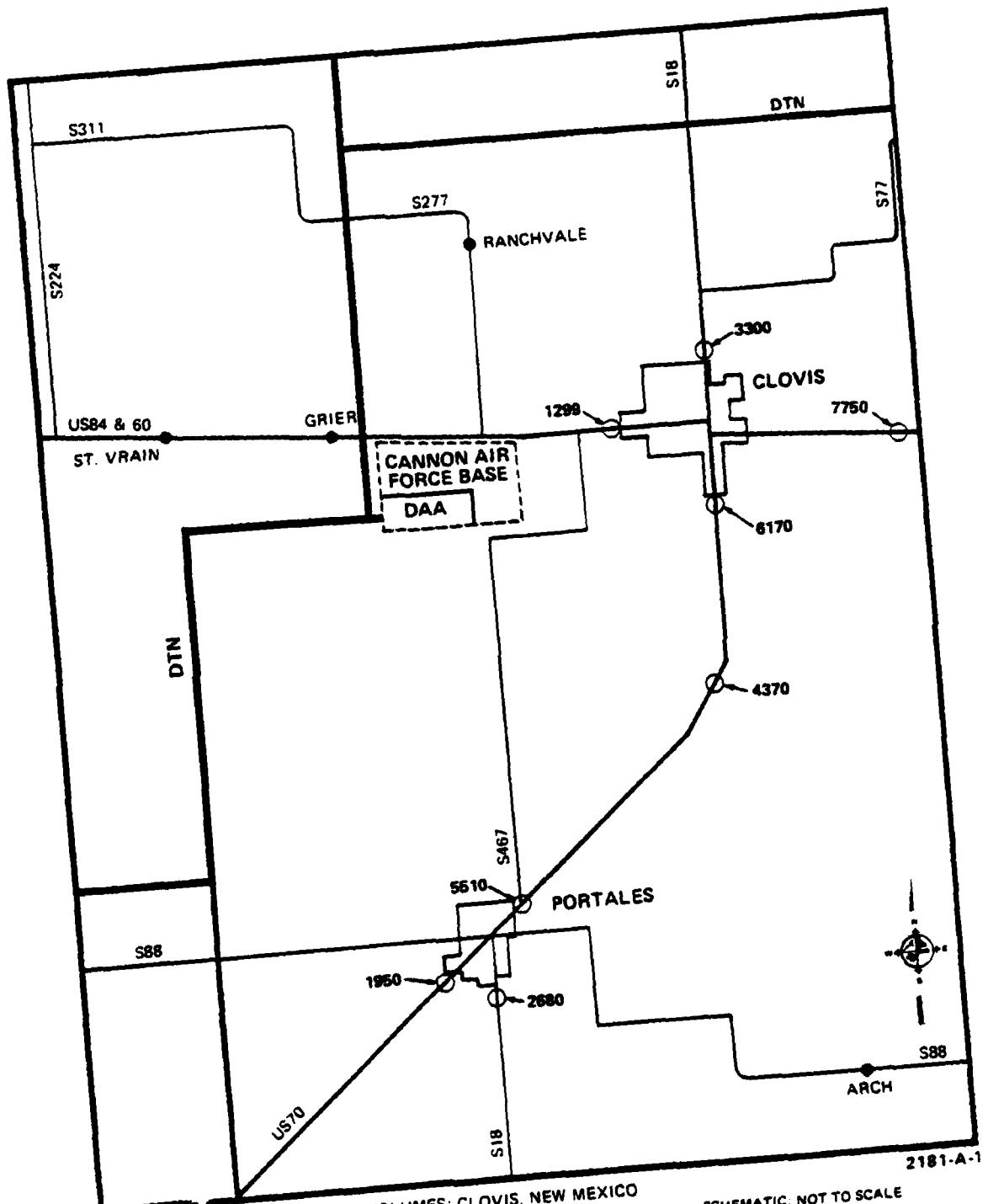


Figure 3.4.6.3-3. Existing traffic volume in the vicinity of Clovis.

Land Ownership (3.4.6.3.10)

Within a 5-mi radius of the base, 95 percent of the land is privately owned; the remainder is state-owned. About 96 percent of Curry County land is privately owned. Federal lands are Cannon Air Force Base, about 3,500 acres, and BLM lands, about 400 acres.

Land Use (3.4.6.3.11)

Total land area in Curry County is approximately 898,560 acres, and is mostly in agricultural use. Croplands are 65 percent, and grazing uses 31 percent. Curry County ranked highest in the production of corn, wheat, and sorghum grain among the counties in New Mexico in 1976, and third in the "all cattle" category. Clovis is a member of the Eastern Plains Council of Governments, the regional planning agency which acts as an A-95 clearinghouse.

The Clovis planning area includes the city of Clovis, Cannon Air Force Base and adjacent land. The general plan is presently being updated.

The dominant land use of Clovis is residential, 68 percent of the community's developed area. Parks/recreation and industrial land occupy 11 percent. Community schools and miscellaneous land uses occupy about 3-4 percent each. Clovis zoning law has not been regularly revised.

Agriculture

The OB area is used for irrigated agriculture. Irrigated farming is declining because of water and other costs.

Recreation

No recreation facilities are near the OB.

Mining

No mining operations are located near the proposed OB site.

Native Americans (3.4.6.3.12)

No significant cultural resources associated with the Apache and Commanche peoples have been documented for the Clovis region. There are no reservation lands or Native American communities close to the area.

Archaeological and Historical Resources (3.4.6.3.13)

The area is known to have been inhabited by hunter-gatherers for at least the last 12,000 years. Although only 18 archaeological sites have been recorded in Curry County, many others are believed to exist. Roosevelt County, where research has been done, contains 296 recorded sites, one of which is in the National Register.

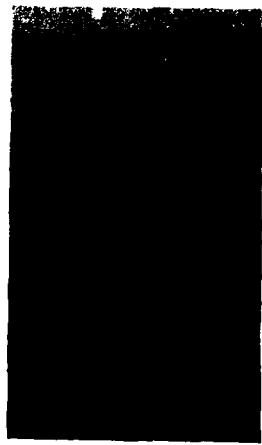
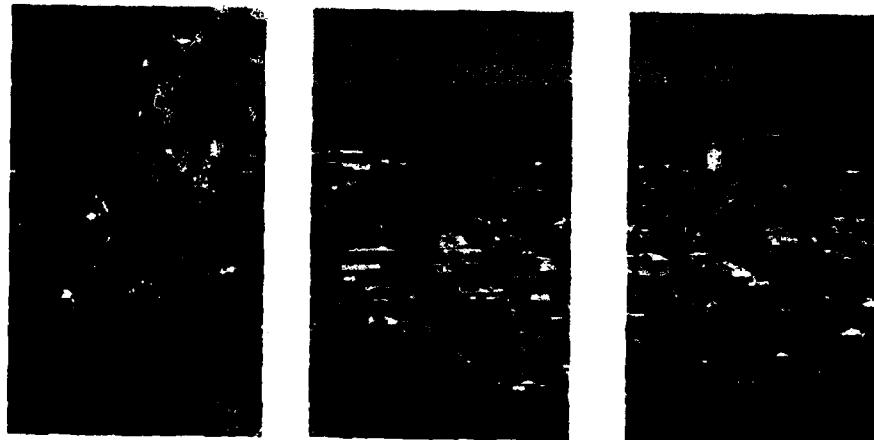
Clovis

Historic occupation began in 1540, with Spanish trading, missionary, and exploring expeditions. Sites from this period near the proposed base are probably found near water. Ranching began in the 1880s, and was predominant until the early 1900s.

Paleontology

The Clovis operating base is located about 35 mi from the western escarpment of the High Plains. Fossil occurrences are not common and consist mostly of gastropods and seeds.

Dalhart



DALHART (3.4.7)

Introduction (3.4.7.1)

The area of analysis (AOA) for the Dalhart operating base option includes Dallam and Hartley counties (Figure 3.4.7.1-1). Dalhart is the major settlement in the AOA. This section details important environmental characteristics of Dalhart and vicinity.

Natural Environment (3.4.7.2)

Groundwater (3.4.7.2.1)

The principal aquifer is sand and gravel beds interbedded with silt, sand, and caliche and ranges in saturated thickness from 6.1×10^m to $1.52 \times 10^2 m$. Precipitation is the sole contributor to groundwater recharge. Withdrawals are 15 times the annual natural recharge. Heavy pumping has resulted in large water-level declines. The groundwater is acceptable for most uses.

Surface Water (3.4.7.2.2)

The Mustang and Carrizo creeks flow southeastward joining north of Dalhart to form Rita Blanca Creek. The Rita Blanca has been dammed just south of Dalhart to form Lake Rita Blanca which is used for recreation.

Precipitation usually occurs most often as infrequent but intense thunderstorms producing rapid surface runoff. About 80 percent of the annual rainfall occurs from May through October. Consumptive use of surface water is limited.

Air Quality (3.4.7.2.3)

A summary of some climatological conditions influencing air quality appears in Table 3.4.1.2-1. The Dalhart OB site is located in AQCR No. 211. Particulate and gaseous emissions for this AQCR are given in Table 3.4.1.2-2. Visibility is poor, due to strong winds.

Biological Resources (3.4.7.2.4)

Area soils are formed on nearly level to gently sloping and undulating upland plains. Slopes are 0 to 3 percent except on the more undulating and hummocky areas where slopes range from 3 to 8 percent. Soils are deep, noncalcareous to calcareous with surface textures ranging from fine sandy loams to loamy fine sands

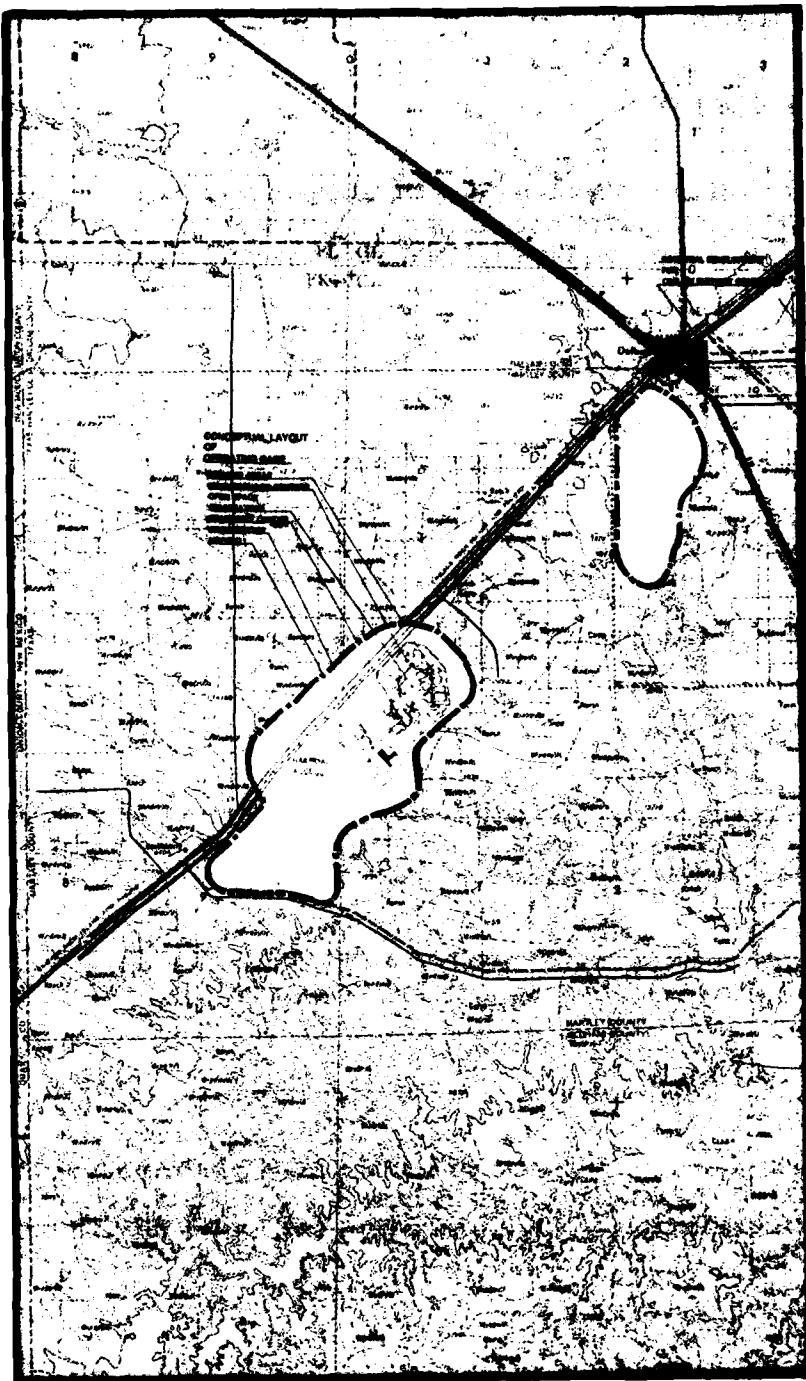


Figure 3.4.7.1-1. Area of Analysis (AOA) for the Dalhart vicinity.

and fine sands. Runoff is slow to medium. The soils of this area present a severe hazard of wind erosion. The predominating soil series present are Dallam and Vingo.

The area is presently under agricultural use, with virtually no native vegetation. The wildlife species in the area are those common to the agricultural areas of the western Texas Panhandle. There is no aquatic habitat at the site. The only protected species likely to be present are the Central Plains milk snake and Texas horned lizard, and migrating individuals of bald eagle, American peregrine falcon, and whooping crane. No protected plants are reported from the area. There are no aquatic species present. There are no nearby potential wilderness areas or significant natural areas. The site is close to the Canadian River Valley, an extensive, topographically complex, biologically diverse area which harbors populations of protected plants and animals, both aquatic and terrestrial. The valley is attractive for recreation, such as hunting, fishing, and off-road vehicle use.

The M-X-induced urban growth in the Dalhart area would occupy farmland and the adjacent valley of an intermittent stream tributary to the Canadian River, which is continuous with the Canadian Breaks. The Dalhart Valley is open rangeland, with habitat for shortgrass prairie plants, upland game, and larger mammals such as mule deer and pronghorn, both of which are found in the Canadian Breaks. The Canadian Breaks proper, with open rangeland and shortgrass prairie areas of upland juniper breaks and riparian vegetation, is located 15 mi south of the base and is the largest undisturbed natural area in the Texas Panhandle. There are also a small number of playa lakes.

Human Environment (3.4.7.3)

Employment (3.4.7.3.1)

Tables 3.4.7.3-1 and 3.4.7.3-2 highlight detailed employment characteristics of Dallam and Hartley counties. The former table indicates the relative dependence of the counties' economies on only one sector-- agriculture, comprising 30 percent of total 1976 employment in Dallam County and 66 percent in Hartley county. Other sectors, notably manufacturing and services, traditionally dominate a well-balanced economic base; in Dallam and Hartley counties, manufacturing particularly, has a very small employment share and the 1976 share of services employment is well below both state and national averages. Table 3.4.7.3-2 presents 9-year employment growth figures and indicates that Dallam and Hartley counties have grown very little; employment only increased by 316 jobs in Dallam county and 499 in Hartley county. Agricultural employment grew by 215 jobs and 359 jobs in Dallam and Hartley counties, respectively. Of the other sectors, only government experienced any appreciable gain in both counties, while employment in construction, manufacturing and services actually decreased in Dallam county between 1967 and 1976.

Table 3.4.7.3-1. Total employment and percent share by major economic sectors for counties in Texas, 1976.

COUNTY	TOTAL EMPLOYMENT	PERCENT OF TOTAL STATE EMPLOYMENT	AGRICULTURE SHARE (PERCENT)	MINING SHARE (PERCENT)	CONSTRUCTION SHARE (PERCENT)	MANUFACTURING SHARE (PERCENT)	SERVICES SHARE (PERCENT)	GOVERNMENT SHARE (PERCENT)
Bailey	3,468	0.06	36.9	(D)	1.9	1.3	10.5	11.3
Castro	4,988	0.09	45.1	(D)	3.8	4.6	7.0	14.0
Cochran	2,092	0.04	43.9	1.1	0.9	2.6	9.2	17.8
Dallam	3,475	0.06	29.9	0.1	2.3	3.7	9.1	11.2
Deaf Smith	9,434	0.17	26.2	0.1	4.2	13.7	8.2	11.8
Hale	15,527	0.27	19.5	0.2	2.9	11.2	13.3	14.6
Hartley	1,356	0.02	65.9	0.0	0.0	0.7	10.8	8.1
Hockley	7,761	0.14	21.3	14.3	2.1	2.2	12.2	16.5
Lamb	7,272	0.13	30.6	0.0	2.7	1.8	11.3	12.3
Lubbock	92,404	1.62	3.2	0.1	4.8	11.8	17.5	20.6
Moore	7,075	0.12	15.8	5.6	6.7	15.2	10.5	13.1
Oldham	1,150	0.02	42.8	(D)	3.8	0.0	14.3	16.6
Parmer	5,539	0.10	47.2	0.0	1.6	9.1	7.1	9.3
Potter/Randall	77,108	1.35	2.3	1.4 ¹	5.3	11.2	16.9	16.1
Sherman	2,179	0.04	53.6	2.7	2.7	0.8	3.5	9.5
Swisher	4,801	0.08	38.0	(D)	1.0	4.5	7.1	12.8
Texas ROI	245,629	4.30	11.3	1.1 ¹	4.4	10.2	15.0	16.8
Total State	5,706,293	100.00	5.1	2.4	5.6	15.0	16.2	18.4
United States	94,685,804		4.5	0.8	3.8	20.1	17.2	18.6

¹Estimated.

²(D) = Not shown to avoid disclosure of confidential information.

Source: BEA, July 1978.

Table 3.4.7.3-2. Texas employment growth by sector, study area counties,
1967-1976. (Page 1 of 2)

COUNTY	TOTAL		AGRICULTURE			MINING			
	1967	1976	Δ ¹	1967	1976	Δ	1967	1976	Δ
Bailey	3,656	3,468	-0.6	1,691	1,281	-3.0	1	(D) ²	(D)
Castro	3,989	4,988	2.5	2,138	2,250	0.6	0	(D)	(D)
Cochran	2,247	2,092	-0.8	1,056	918	-1.5	114	22	-16.7
Dallam	3,159	3,475	1.1	823	1,038	2.6	1	4	16.7
Deaf Smith	6,524	9,434	4.2	2,346	2,473	0.6	(D)	6	(D)
Hale	13,875	15,527	1.3	3,469	3,033	-1.5	42	28	-4.4
Hartley	857	1,356	5.2	535	894	5.9	0	0	0.0
Hockley	7,256	7,761	0.8	2,391	1,655	-4.0	836	1,109	3.2
Lamb	6,907	7,272	0.6	2,820	2,222	-2.6	(D)	2	(D)
Lubbock	69,990	92,404	3.1	3,823	2,922	-2.9	68	102	4.6
Moore	5,712	7,075	2.4	818	1,116	3.5	232	399	6.2
Oldham	1,037	1,150	1.2	362	444	2.3	(D)	(D)	(D)
Parmer	4,306	5,539	2.5	2,460	2,616	0.7	(D)	0	(D)
Potter/Randall	72,807	77,108	0.6	1,664	1,781	0.8	874	(D)	2.0 ⁴
Sherman	1,650	2,179	3.1	827	1,167	3.9	21	58	11.9
Swisher	4,584	4,801	0.5	2,008	1,826	-1.1	(D)	(D)	(D)
Texas ^{3,01}	216,565	245,629	1.8	29,231	27,636	-0.6	2,189	2,772 ^c	2.7 ^b
Total State	4,419,612	5,706,293	2.9	328,978	290,915	-1.4	106,186	137,691	2.9
United States	82,506,400	94,685,804	1.5	4,625,000	4,262,804	-0.9	615,000	777,000	2.6

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Table 3.4.7.3-2. Texas employment growth by sector, study area counties, 1967-1976.
 (Page 2 of 2)

COUNTY	CONSTRUCTION		MANUFACTURING		SERVICES		GOVERNMENT	
	1967	1976	1967	1976	1967	1976	1967	1976
Bailey	121	66	-6.5	27	46	6.1	304	364
Castro	130	191	4.4	109	229	8.6	313	347
Cooper	(D)	18	(D)	(D)	54	(D)	148	193
Dallam	94	79	-1.9	151	128	-1.8	422	316
Deaf Smith	182	396	9.0	521	1,292	10.6	607	-3.2
Hale	562	449	-2.5	838	1,737	8.4	2,038	2,070
Hartley	(D)	0	(D)	0	9	--	27	146
Hockley	188	165	-1.4	103	172	5.9	731	949
Lamb	77	196	10.9	127	129	0.2	586	820
Lubbock	3,242	4,452	3.6	6,061	10,949	6.8	12,435	16,192
Moore	395	471	2.0	1,175	1,072	-1.9	395	744
Oldham	(D)	39	(D)	0	0	0.0	29	148
Parmer	55	88	5.4	128	503	16.4	366	391
Potter/Randall	2,644	4,064	4.9	4,749	8,614	6.8	10,407	13,017
Sherman	(D)	58	(D)	9	17	7.3	65	77
Swisher	116	49	-9.1	105	218	8.5	295	342
Trotts ROI	7,806	10,781	3.7*	14,103	25,169	6.6	29,168	36,888
Total State	213,973	321,143	4.6	665,385	854,662	2.8	698,176	923,660
United States	3,308,000	3,615,000	1.0	19,504,000	19,026,000	-0.3	12,675,000	16,307,000

* Average annual growth rate.

? (D) = Not shown to avoid disclosure of confidential information.

*(1.) = less than 10 wage and salary jobs.

*Rate in doubt because of large number of data points withheld.

** = undefined.

† estimate.

Sources: BEA, July 1978

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The baseline labor force for Dallam and Hartley counties are traced graphically from 1974-1994 in Figures 3.4.7.3-2 and 3.4.7.3-3. In Dallam County, the amount of workers in the labor has increased over the last 6 years from 2,492 in 1974 to 2,720 in 1980. The labor force is projected to decline in 1982 to 2,300 and then begin a steady rise to bring it back to the 1980 level by 1994. In Hartley County, the labor force decreased from 1974 to 1976 and then increased to 1,300 by 1980. Projections indicate an increase to 1,450 workers by 1994.

The baseline unemployment rates in Dallam and Hartley counties are shown graphically from 1974-1994 in Figures 3.4.7.3-4 and 3.4.7.3-5. Over the last 6 years the unemployment rate has remained close to 3.5 percent in Dallam County (except for a sudden jump to 8 percent in 1980) and is projected to be about 3.5 percent through 1994. Hartley County shows a declining unemployment trend over the last six years (until 1980 when the rate reaches 5 percent). Unemployment is projected to decline in 1982 back to the 2.5 percent level through 1994.

Income and Earnings (3.4.7.3.2)

Real total earnings have exhibited losses in both counties over the 1968-1978 period. Table 3.4.7.3-3 highlights Dallam and Hartley county earnings by major industrial sector relative to other Texas ROI counties. It indicates that both counties suffered major earnings losses in agricultural and construction sectors (although 1968 earnings in Hartley county are unavailable due to disclosure rules, 1971 data, used to determine growth in earnings, indicate a decline by an average annual rate of 13.2 percent. However, significant earnings growth in Dallam County manufacturing and Hartley County services industries occurred during the 10-year.

Table 3.4.7.3-4 highlights per capita income and earnings shares by major industry in Dallam and Hartley counties. Per capita income in 1978 was \$7,957 in Dallam County, above both the state and national figures. However, Hartley County per capita income was only \$5,104 in 1978, two-thirds that of the Texas and United States averages. By industrial source, agriculture obtained the major share of earnings in both counties, 20 percent in Dallam County and 23 percent in Hartley County. Hartley County services share was 18 percent, and was above both the state and national averages for that industry. All other section in both counties were well below the Texas and United States average earnings shares by industry.

Public Finance (3.4.7.3.3)

Table 3.4.7.3-5 presents general fund receipts and expenditures for Dalhart. Property taxes and the one percent sales tax contribute 55 percent of Dalhart city's total general revenues. A small percentage of revenues, 8.8 percent is intergovernmental transfers. Police and fire are 39.3 percent of general expenses and streets and maintenance 22.9 percent. Including sanitation, public services are 80 percent of total general fund expenditures.

Table 3.4.7.3-6 presents general revenues and expenditures for Dallam and Hartley counties. Sales and property taxes represent 66.9 percent and 58.9 percent of total revenues for Hartley and Dallam Counties, and intergovernmental transfers

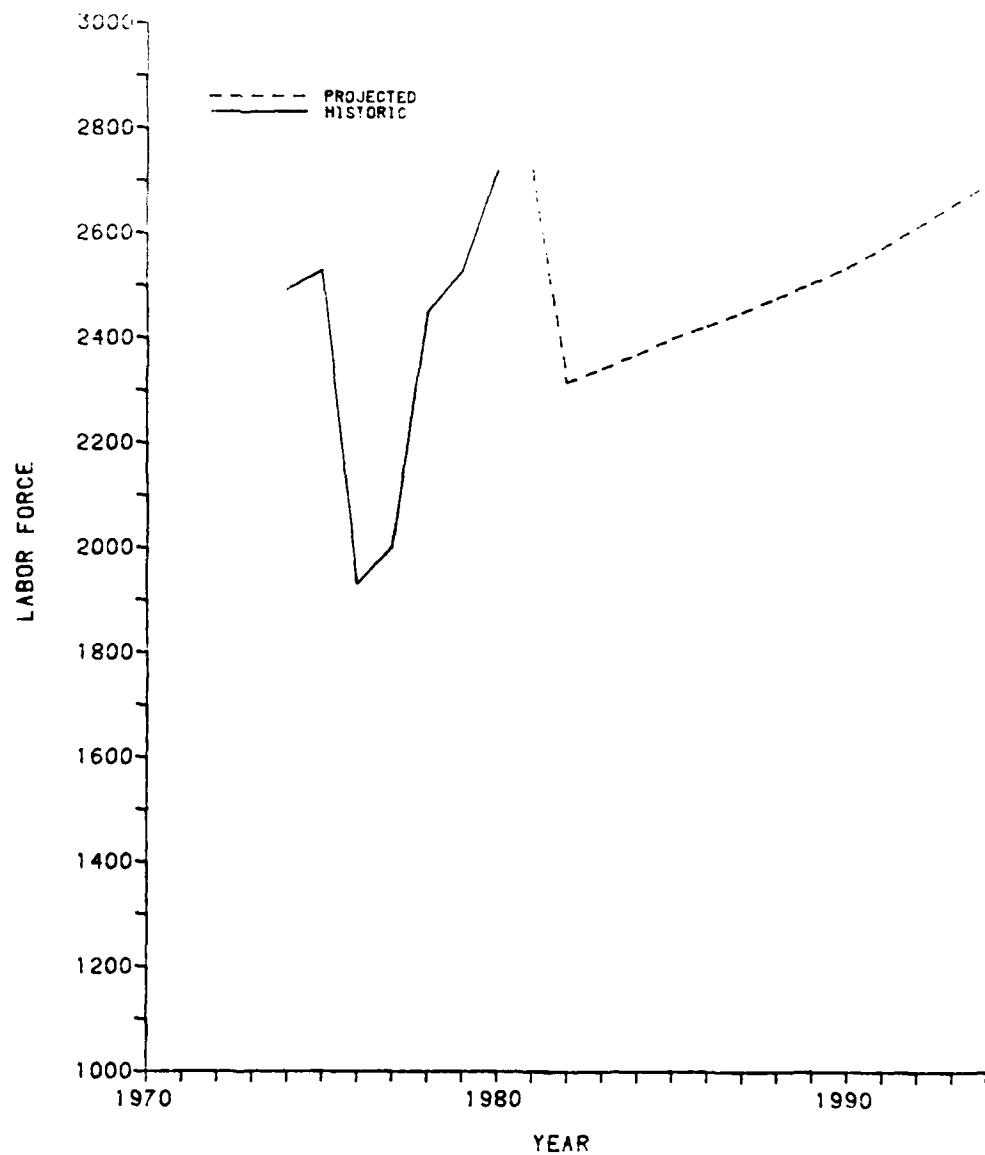


Figure 3.4.7.3-2. Historic and projected baseline labor force in Dallam County.

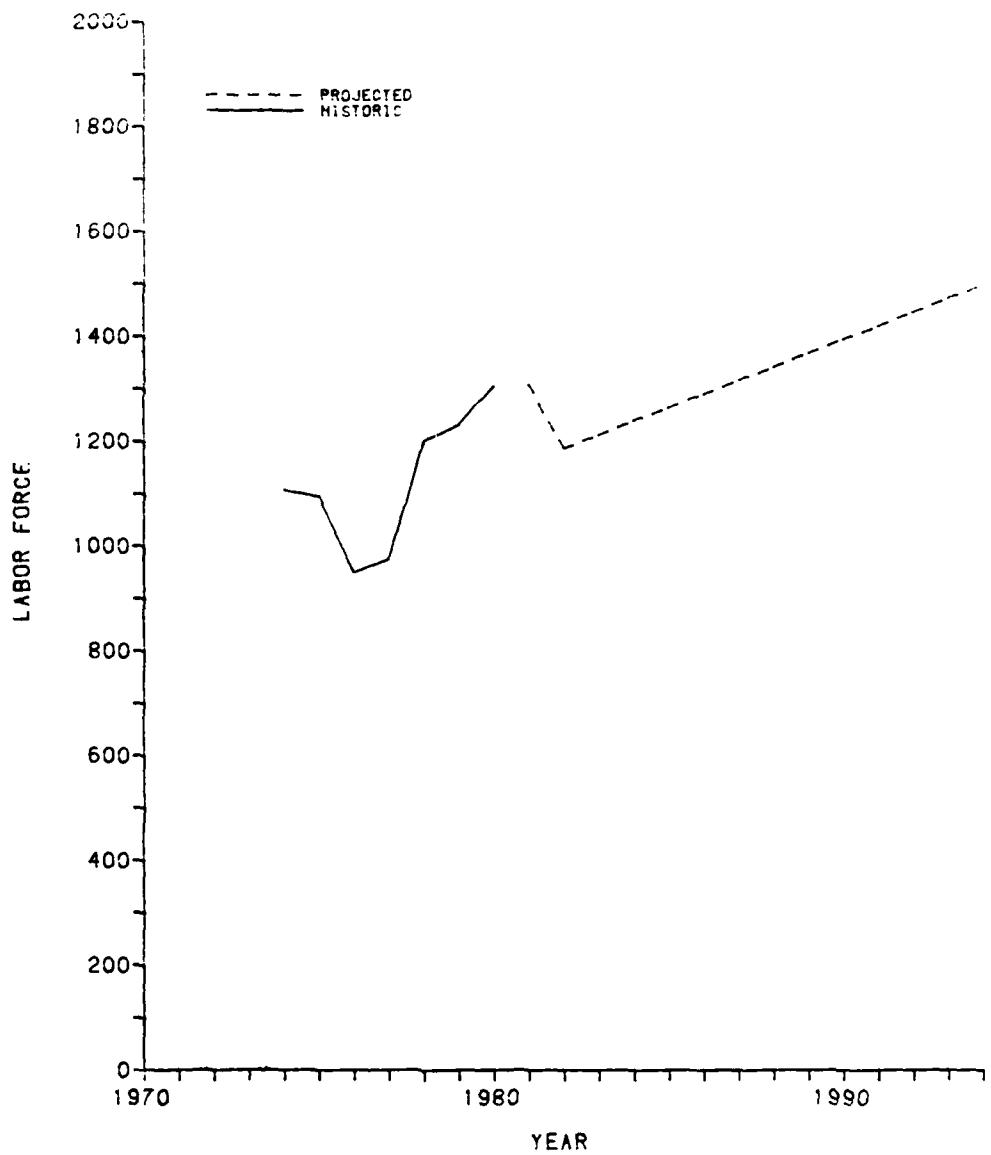


Figure 3.4.7.3-3. Historic and projected baseline labor force in Hartley County.

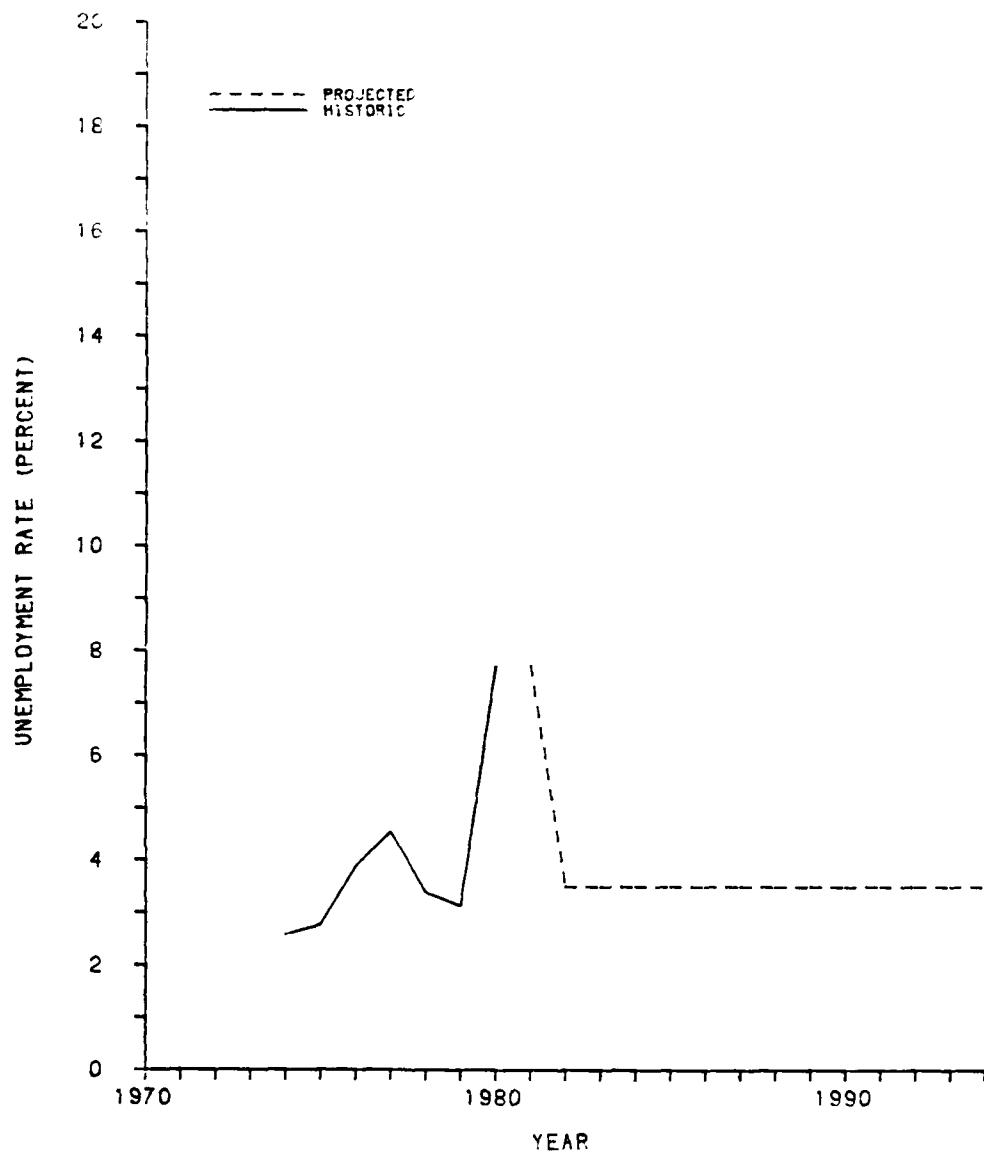


Figure 3.4.7.3-4. Historic and projected baseline rate of unemployment in Dallam County.

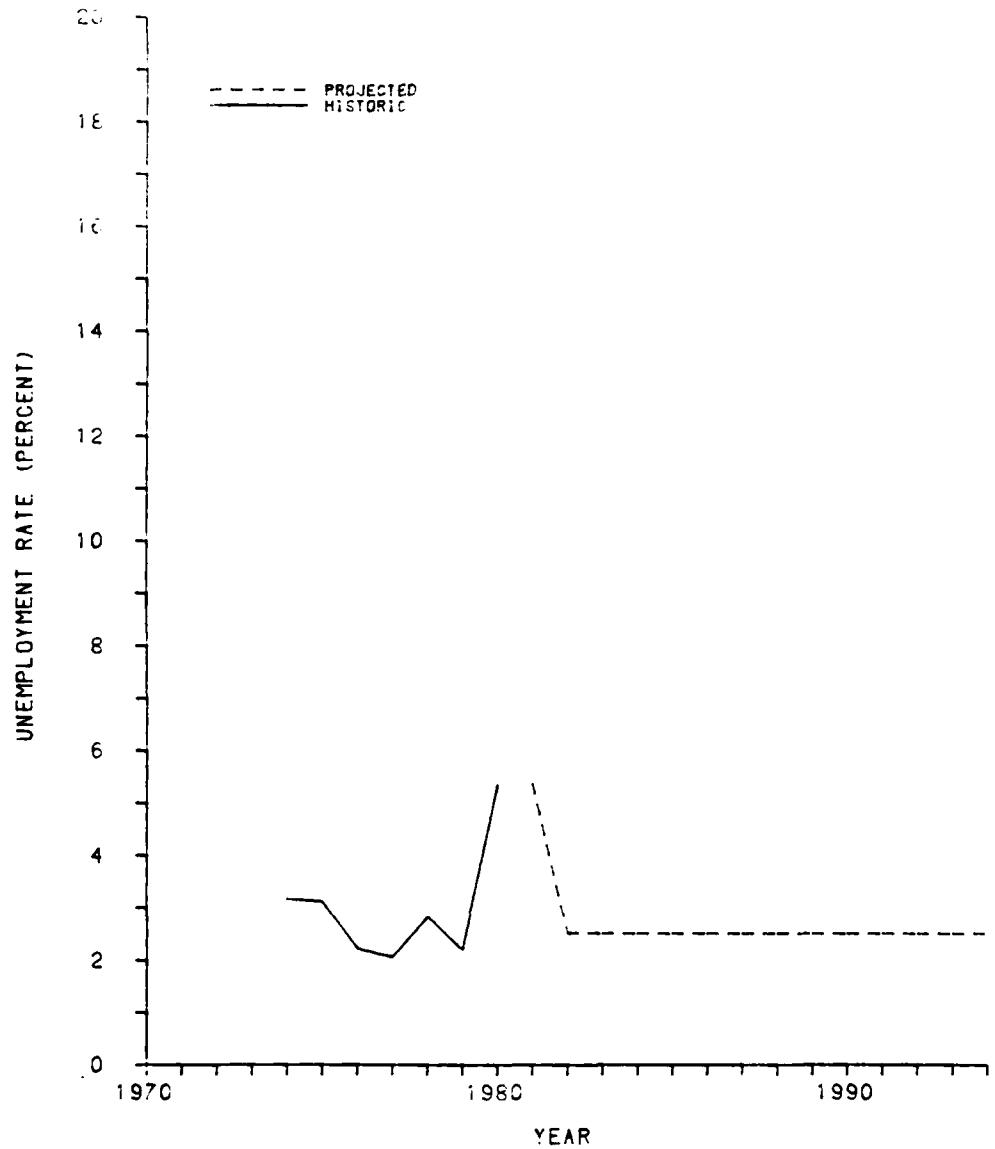


Figure 3.4.7.3-5. Historic and projected baseline rate of unemployment in Hartley County.

Table 3.4.7.3-3. Earnings by economic sector, Texas counties, 1968-1978 (in thousands of 1978 dollars). (Page 1 of 2).

COUNTY	TOTAL EARNINGS		AGRICULTURE			MINING			
	1968	1978	A ¹	1968	1978	A	1968	1978	A
Bailey	46,133	35,236	-2.7	28,659	9,186	-10.8	(D) ²	(D)	(D)
Castro	67,020	55,679	-1.8	50,385	26,024	-6.4	(L),	(D)	(D)
Cochran	21,881	14,191	-4.2	13,290	2,618	-15.0	626	1,051	5.3
Dallam	37,425	37,233	-0.1	15,782	7,419	-7.3	(D)	(D)	(D)
Deaf Smith	108,874	124,239	1.3	63,791	40,051	-4.5	'72 104	393	25.1*
Hale	162,954	160,160	-0.2	67,988	22,898	-10.3	484	'77 828	6.1*
Hartley	14,411	7,439	-6.4	10,592	1,700	-16.7	(L)	0	0.0*
Hockley	84,476	87,512	0.4	35,799	-1,210	— ^s	13,461	33,167	9.4
Lamb	86,164	76,582	-1.2	51,347	21,818	-8.2	'74 118	259	21.7*
Lubbock	760,076	1,112,969	3.9	65,730	10,656	-16.6	1,727	6,326	13.9
Moore	83,044	86,374	0.4	18,579	-5,467	— ^s	4,164	8512 '76	9.3*
Oldham	8,657	12,908	4.1	3,300	5,286	4.8	(D)	(D)	(D)
Parmer	86,481	42,752	-6.8	65,389	4,184	-24.0	(L)	0	0.0*
Potter/Randall	716,753	1,004,891	3.4	18,291	3,956	-24.5	(D)	(D)	(D)
Sherman	32,327	4,846	-17.3	25,296	-6,642	— ^s	257	2,182	23.8
Swisher	68,147	53,283	-2.4	44,558	24,067	-6.0	167	0	— ^s
Texas ROI	2,384,823	2,916,284	2.0	578,776	166,544	-11.7	20,964 ^b	54,431 ^b	10.0*
Total State	50,632,048	79,094,829	4.6	2,493,921	1,320,190	-6.2	1,965,381	4,331,438	8.2
United States	1,039,655,600	1,318,750,000	2.4	33,188,000	33,188,000	0.1	10,528,125	20,552,000	6.9

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Table 3.4.7.3-3. Earnings by economic sector, Texas counties, 1968-1978 (in thousands of 1978 dollars). (Page 2 of 2).

COUNTY	CONSTRUCTION			MANUFACTURING			SERVICES			GOVERNMENT		
	1968	1978	A	1968	1978	A	1968	1978	A	1968	1978	A
Ballei	1,134	980	-1.4	849	4,356	17.8	3,105	4,173	3.0	3,302	3,378	1.4
Castro	849	1,671	7.0	1,629	4,169	9.9	3,199	4,256	2.9	3,334	5,199	4.5
Cochran	213	449	11.2	157	938	22.0	1,069	1,758	5.1	2,818	3,010	0.7
Dallam	1,603	855	-6.1	1,043	5,316	17.7	3,741	4,256	1.3	2,933	3,725	2.4
Deaf Smith	4,470	5,407	1.9	7,329	19,767	10.4	6,118	10,629	5.7	7,361	10,658	3.8
Hale	5,466	7,175	2.9	1,031	26,954	10.1	17,998	21,070	1.6	16,551	20,055	1.9
Hartley	920	341	-13.2	144	(L)	-23.4	218	1,331	19.9	1,050	929	-1.2
Hockley	2,415	4,251	5.8	1,226	2,537	7.5	7,258	8,613	1.7	9,238	13,884	4.2
Lamb	1,444	2,079	4.1	1,524	10,198	20.9	7,335	8,244	1.2	6,060	7,810	2.6
Lubbock	43,952	77,285	5.8	76,528	164,481	8.0	119,109	189,966	4.8	159,724	220,244	3.3
Moore	7,489	7,417	-0.1	21,578	31,140	3.7	5,310	9,333	6.5	9,094	8,749	-0.4
Oldham	1,033	767	-5.8	(L)	(L)	0.0	294	2,050	21.4	1,086	1,484	3.2
Parmer	960	2,292	9.1	3,589	12,231	13.0	3,480	5,313	4.3	4,200	4,849	1.4
Potter/Randall	35,501	93,845	9.0	59,919	130,166	8.1	102,053	163,666	4.8	188,184	140,225	-2.9
Sherman	624	1,104	5.9	141	158	1.1	705	1,249	5.9	1,802	1,863	0.3
Swisher	848	1,115	2.8	786	2,432	12.0	3,409	5,164	4.2	4,881	5,525	1.2
Texas ROI	113,554	207,143	6.2	177,445	414,843	3.9	284,401	441,678	4.5	421,613	451,587	0.7
Total State	3,318,426	6,656,905	7.2	10,601,873	15,748,144	4.0	7,048,781	12,276,159	5.7	9,123,238	12,254,386	2.7
United States	62,388,750	79,872,000	2.5	303,099,380	345,771,000	1.3	153,226,880	221,951,000	3.8	174,725,630	216,896,000	2.2

¹A = Average annual growth rate.

? (D) = Not shown to avoid disclosure of confidential information.

²(L) = Less than 10 wage and salary jobs.

* Rate in doubt because of large number of data points withheld by disclosure rules.

— = Undefined.

^a = Estimate.

Table 3.4.7.3-4. Per capita income and earnings shares by economic sector, Texas counties, 1978.

COUNTY	1978 PER CAPITA INCOME	TOTAL 1978 EARNINGS (000's of \$)	PERCENT OF TOTAL, STATE EARNINGS	AGRICULTURE SHARE (PERCENT)	MINING SHARE (PERCENT)	CONSTRUCTION SHARE (PERCENT)	MANUFACTURE SHARE (PERCENT)	SERVICES SHARE (PERCENT)	GOVERNMENT SHARE (PERCENT)
Bailey	6,870	35,236	0.04	26.1	(D)	2.8	12.4	11.8	10.7
Castro	6,359	55,679	0.07	46.7	(D)	3.0	7.5	7.6	9.3
Cochran	4,907	14,191	0.02	18.4	7.4	3.2	6.6	12.4	21.2
Dallam	7,957	37,233	0.05	19.9	(D)	2.3	14.3	11.4	10.0
Deaf Smith	8,054	124,229	0.16	32.2	0.3	4.4	15.9	8.6	8.6
Hale	6,683	160,160	0.20	14.3	9.5 ¹	4.5	16.8	13.2	12.5
Hartley	5,104	7,439	0.01	22.9	0.0	4.6	0.1 ¹	17.9	12.5
Hockley	6,070	87,512	0.11	-1.4	37.4	4.8	2.9	9.7	15.6
Lamb	6,822	76,582	0.10	28.5	0.3	2.8 ¹	13.3	10.8	10.2
Lubbock	7,260	1,112,969	1.41	1.0	0.6	6.9	14.8	17.1	19.8
Moore	6,944	86,374	0.11	-6.0	11.8 ¹	8.1	33.9	11.5 ¹	9.5
Oldham	6,403	12,908	0.02	41.0	(D)	5.9	0.1 ¹	15.9	11.5
Parmer	5,767	42,752	0.05	9.8	0.0	5.4	28.6	12.4	11.3
Potter/Randal	8,472	1,004,891	1.27	0.4	(D)	9.3	13.0	16.3	14.0
Sherman	3,214	4,846	0.01	-57.8	19.0	9.6	1.4	9.8	14.6
Swisher	7,702	53,283	0.07	45.2	0.0	2.1	4.6	9.7	10.4
Texas ROI	7,460	2,916,284	3.69	5.7	1.9 ¹	7.1 ¹	14.2	15.1 ¹	15.5
Total State	7,746	79,094,829	100.00	1.7	5.5	8.4	19.9	15.5	15.5
United States	7,840	1,318,750,000		4.4	1.6	6.1	26.2	16.8	16.4

¹Estimated.

? (D) = not shown to avoid disclosure of confidential information.

Source: BEA, July 1980.

Table 3.4.7.3-5. General fund receipts and expenditures, City of Dalhart, Texas, fiscal year 1977-1978.

ITEMS	DOLLARS	PERCENT
REVENUES		
Taxes	332,591	54.96
Property	155,042	
Sales	177,549	
Fines and Forfeitures	20,254	3.34
License and Permits	6,486	1.09
Intergovernmental Transfer	53,124	8.76
Sanitation Fees	116,902	19.32
Other	75,812	12.53
TOTAL REVENUE	605,169	100.00
EXPENDITURES		
Administration	74,298	10.76
Police	200,430	29.04
Fire	70,543	10.22
Streets and Maintenance	156,806	22.72
Parks	42,399	6.14
Sanitation	130,065	18.84
Other	15,752	2.28
TOTAL EXPENDITURE	690,293	100.00

2646

Source: City of Dalhart, Statement of Revenues and Expenditures, 1977-78.

Table 3.4.7.3-6. General fund receipts and expenditures, Hartley and Dallam counties, fiscal year 1976-1977.

ITEMS	HARTLEY, TEXAS		DALLAM, TEXAS	
	DOLLARS	PERCENT OF TOTAL	DOLLARS	PERCENT OF TOTAL
GENERAL REVENUE	320,000	100.00	455,000	100.00
Intergovernmental	56,00	17.50	98,000	21.54
Taxes	214,000	66.88	268,000	58.90
Property	127,000		121,000	
Sales	4,000		8,000	
Other	83,000		139,000	
Charges and Misc.	50,000	15.62	89,000	19.56
GENERAL EXPENDITURE	402,000	100.00	476,000	100.00
Education	1,000	.25	16,000	3.36
Transportation	161,000	40.05	147,000	30.88
Public Safety	43,000	10.70	46,000	9.66
Parks and Recreation	24,000	5.97	46,000	9.66
Gov't Administration	120,000	29.85	183,000	38.44
Other	53,000	13.18	38,000	8.00
SALARY AND WAGE	187,000	46.52	209,000	43.91

2645

Source: 1977 Census of Government, Finances of Counties, U.S.
Department of Commerce, Bureau of the Census.

less than 22 percent. Expenditures are concentrated in transportation and government administration functions, which together total 69.9 percent of all expenditures in Hartley County and 69.3 percent in Dallam County. Tables 3.4.7.3-7 and 3.4.7.3-8 present assessed value indebtedness and reserve bonding capacity for Dallam and Hartley counties.

Population (3.4.7.3.4)

Dalhart's 1980 population is 5,905, with 4,488 (76 percent) residing in Dallam County, and 1,417 (24 percent) in Hartley County. The combined population of the two counties is projected to increase from about 10,200 in 1980 to 13,800 by 2000.

Housing (3.4.7.3.5)

Dallam County's housing units declined slightly from 1960 to 1970. Housing production has increased at an annual rate of 2.9 percent reaching 2,750 units by 1979. Single-family units decreased from 89 percent in 1970 to 73 percent in 1979. Multi-family units and mobile homes increased to 27 percent in 1979, from 11 percent in 1970.

From 1970 to 1979 about 40 permanent housing units were built each year. In 1979, there were 475 mobile homes. In 1970, the owner-occupancy rate was 66 percent. In the same year, almost 92 percent of the county's housing was in Dalhart.

Community Infrastructure (3.4.7.3.6)

Organization

The city of Dalhart has a mayor/council form of government with an appointed city manager.

Education

In 1980, there were 1,600 pupils enrolled in the Dalhart Independent School District which employed 100 teachers. About 100 additional pupils could be accommodated.

Health Care

Dalhart has a hospital with 67 acute-care and 80 long-term care beds. Health services personnel are five doctors, 20 LPNs, 10 RNs, four dentists, and three part-time mental health workers. An increase in health care facilities and personnel is planned.

Police Protection

Dalhart has seven city policemen, 24 officers in the Dallam County sheriffs' office, and two officers in the Hartley County sheriff's office.

Fire Protection

Dalhart has 30 volunteer and one paid firemen. Equipment includes: two 1,500-gallon pumper, one back-up pumper truck, five 4-wheel drive vehicles, and a

Table 3.4.7.3-7. Assessed values, indebtedness, and reserve bonding capacity, Hartley County, 1979.

JURISDICTION	ASSESSED VALUE	GENERAL OBLIGATION INDEBTEDNESS	RESERVE BONDING CAPACITY
Hartley County	\$58,190,089	\$ 25,392	(1)
Dalhart ISD ²	\$55,909,000	\$316,666	(1)
City of Dalhart	\$74,340,000	\$419,213	(1)

3135

(1) Tax bonds are limited to an amount which produces debt service requirements equal to or less than that which can be paid by a tax rate of \$.40 per \$100 assessed value.

²Independent School District.

Source Municipal Advisory Council of Texas, 1980.

Table 3.4.7.3-8. Assessed value, indebtedness, and reserve bonding capacity, Dallam County, 1979.

JURISDICTION	ASSESSED VALUE	GENERAL OBLIGATION INDEBTEDNESS	RESERVE BONDING CAPACITY
Dallam County	\$31,993,081	\$0	(1)
City of Dalhart	\$74,340,060	\$419,213	(1)
Dalhart ISD (2)	\$55,909,000	\$316,666	(1)

3134-1

(1) Tax bonds are limited to an amount which produces debt service requirements equal to or less than that which can be paid by a tax rate of \$.40 per \$100 assessed value.

(2) Independent School District.

Source: Municipal Advisory Council of Texas, 1980.

250-gallon mini-pumper. The fire department has a mutual aid agreement with Hartley.

Water Supply and Distribution

Water for Dalhart is obtained from six wells and three on standby. Total capacity is 4,650 gpm. Average and peak water usages are 1,014 gpm and 3,400 gpm.

Wastewater Collection and Treatment

Dalhart's wastewater treatment facilities have a capacity of 1.0 mgd. Flow is about 0.8 mgd.

Solid Waste

Dalhart's waste disposal site is used by both city and county residents. The 80-acre site will be adequate for 70 years.

Parks and Recreation

Dalhart has two city parks with playgrounds and one city swimming pool. Recreational sites within an approximate 50 mi radius around Dalhart are expected to receive the greatest effect of the in-migration.

Parklands

There are two National Grasslands, Rita Blanca and Kiowa; one New Mexico State Park, Clayton Lake; and Lake Meredith National Recreation Area within the assumed 50 mi "sphere of influence" (Table 3.4.7.3-9). Due to the lack of sites immediately available, sites a bit farther away may receive more use. These include Palo Duro State Park, Ute Lake State Park, and Capulin Mountain National Monument.

Snow Related Recreational Facilities

There are no snow related recreational opportunities in the near vicinity of the proposed Dalhart OB site. The nearest facilities are in the Carson, Lincoln and Santa Fe National Forests, over 200 mi to the west and south.

Water Related Recreational Facilities

Outdoor recreation in this region is predominately centered around water resources. Lake Meredith accommodates nearly one-half of the yearly visitors to the combined federally owned recreation facilities in Texas (Texas Parks and Recreation, 1975). Clayton Lake and Lake Meredith are the most developed recreational sites. Lake Rita Blanca south of the outskirts of Dalhart is also developed for camping, boating and fishing.

ORV and Other Forms of Dispersed Recreation

Due to the large private land holdings in this area, opportunities for ORV recreation as well as dispersed forms of recreation, hiking, rockhounding, etc, are

Table 3.4.7.3-9. Developed recreation sites in the vicinity of Dalhart.

SITE NAME	ACTIVITIES	ACRES	MILES FROM DALHART
Clayton Lake State Park	Camping Fishing Boating	417 170 ¹	60
Kiowa National Grasslands	Picknicking		45
Rita Blanca National Grasslands (Thompson Grove Rec. Area)	Picknicking	8	30-40
Lake Meredith National Recreation Area	Camping Boating Fishing Swimming Picknicking	22,671 16,504 ¹	70-80
Lake Rita Blanca		560 ¹	5

3811

¹Surface Water Acres

Source: New Mexico State Planning Office, 1976; Texas Parks & Wildlife Department, 1975

not abundant. In the entire area of 11 counties including Dallam and Hartley, there is only one hiking trail and one motorized trail (Texas Parks and Wildlife Dept., 1975).

Quality of Life (3.4.7.3.7)

Dallam and Hartley are adjacent counties between which the community of Dalhart is located. The two counties show steady population growth at 1.7 percent/year from 1970 to 1977, and are heavily dominated by agriculture and agrarian life styles. Incomes tend to be much lower in Dallam County compared to Hartley County. The economic well being of Hartley County seems to be high, with low unemployment and welfare caseloads.

Medical facilities are adequate. Rural Texas counties have very low crime rates, and other indicators of social disorganization show the region to be quite stable. The Hartley County population averages one year more education than Dallam County, 12.4 years compared to 11.3.

Traffic and Transportation (3.4.7.3.8)

U.S. Highway 385 runs north and south through Dalhart to Dumas, via U.S. Highway 87, and Amarillo. U.S. Highway 54 passes through Dalhart, and near the proposed OB site. Figure 3.4.7.3-6 shows the major roads in the Dalhart vicinity and the 1975 traffic volumes.

U.S. 54 has an average daily traffic of 1,830 vehicles near the proposed site, and U.S. 385 has average daily traffic of 4,300 vehicles south of Dalhart. A low volume county road, running west from Hartley passes near the site. All roads are good quality two-lane facilities which provide good service for current traffic levels.

Three railroads provide service to the Dalhart area; the nearest commercial airline service is at Amarillo.

Energy (3.4.7.3.9)

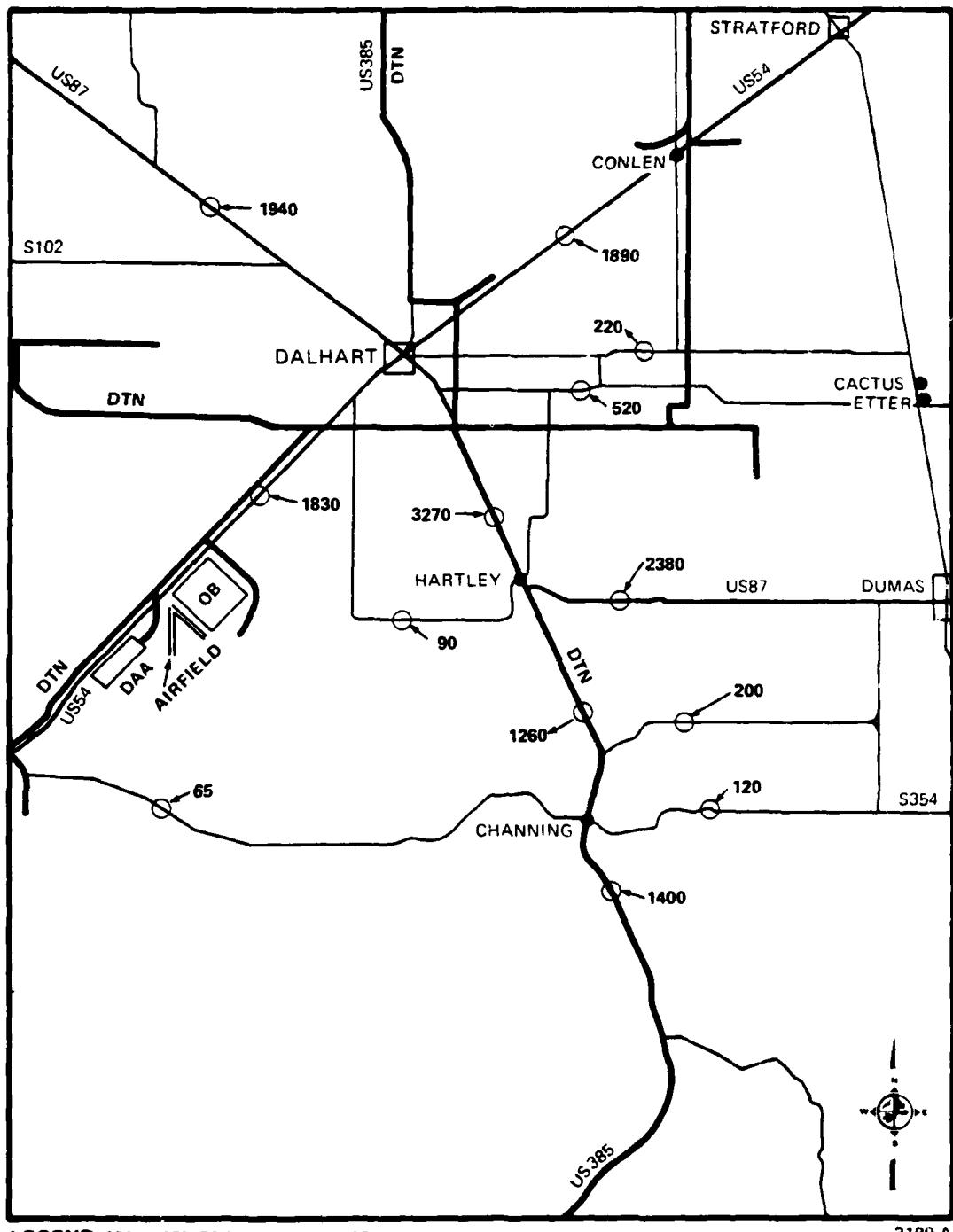
Natural gas supplies are excellent and could handle increased demands. Amarillo is a large petroleum refining center and petroleum product supplies should be adequate for increased uses. Electrical energy is supplied to Dalhart by 115 kV and 69 kV transmission lines.

Land Ownership (3.4.7.3.10)

About 96 percent of the land area in Dallam and Hartley counties is privately owned, and comprises approximately 1,830,770 acres. The remainder, 77,582 acres, is owned by the federal government and is located exclusively in Dallam County. The proposed OB complex is located in an area that is exclusively in private ownership. No federal or state lands exist within 20 mi of the proposed site.

Land Use (3.4.7.3.11)

Land use/land ownership patterns are shown on Figure 3.4.6.3-4. Approximately 93 percent of Dallam and Hartley counties is in agricultural uses; rangelands



LEGEND 000 - 1975 TRAFFIC VOLUMES; DALHART, TEXAS

2180-A

SOURCE: TEXAS STATE DEPARTMENT OF HIGHWAYS AND PUBLIC TRANSPORTATION

SCHEMATIC NOT TO SCALE

Figure 3.4.7.3-6. Traffic volumes in the vicinity of Dalhart, 1975.

occupy 63.8 percent and croplands 29.5 percent. Both Dallam and Hartley counties are members of the Panhandle Regional Planning Commission. A land management plan was adopted in 1978. Most land is used for agriculture. The 1990 projection of land use categories is given in Table 3.4.7.3-10. These projections show a reduction in rangeland and dryland crops and a proportionate increase in irrigated cropland due primarily to improvement in irrigating techniques. Further, the projection shows only a modest increase in urban land needs, indicating that low density rural development is expected to continue. Dalhart completed a master plan in 1965 and Dalhart has a "cluster" type of development. Of the 1,470 acres in the city of Dalhart, 67 percent (990 acres) is developed. Of the developed area, 30 percent is residential, 6 percent commercial, 12 percent industrial, 6 percent public and quasi-public, and 46 percent streets. About 480 acres are vacant.

Agriculture

All of the land at the OB site is used for grazing.

Recreation

No recreational sites are on or near the site. All of the land is privately owned and not open to public recreation.

Mining

There are no mining activities in the vicinity.

Native Americans (3.4.7.3.12)

Historic aboriginal habitation sites associated with Apache peoples have been documented for the North and South Canadian Rivers. Few Apache or Comanche material cultural remains have been inventoried for the Llano Estacado area of Western Texas. There are no Native American communities or Indian reservations in the vicinity.

Archaeological and Historical Resources (3.4.7.3.13)

Locations of archaeological sites in this region are not known at this time. Some permanent village sites have been found along the Canadian River and its tributaries, and camping and kill sites are undoubtedly present on the Plains near water. About 21 percent of the area within Dallam and Hartley counties is expected to have concentrations of resources.

Intermittent Spanish and Mexican contact from 1541 until the 1800s in the form of trading, exploring, and missionary expeditions, probably left archaeological remains near water. Permanent white settlement in the area did not occur until the late 1800s.

Paleontology

Dalhart is 80 mi west of the important vertebrate fauna localities in Hemphill County. The Hemphillian fauna is found in the upper 150 ft of the Ogallala Formation and can be found in the Dalhart area. Pleistocene deposits on top of the Ogallala could also contain fossils.

Table 3.4.7.3-10. Projected land use in Dallam
and Hartley counties, in 1990.

LAND USE CATEGORY	DALLAM COUNTY	HARTLEY COUNTY	TOTAL ACRES
	ACRES	ACRES	
Federal Land	77,582		77,582
Urban Land	8,254	32,292	40,546
Water Areas	2,585	2,200	4,785
Rangeland	451,941	441,968	893,909
Dryland Crops	124,751	145,983	270,734
Irrigated Crops	282,887	325,000	607,887
Other Uses	8,160	4,749	12,909
Totals	956,160	952,192	1,908,352

2592

Source: Regional Land Resource Management Plan, 1978.

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